

The study of the informal city using the sources available: the case of illegal urbanisations in Andalusia

El estudio de la ciudad informal a partir de las fuentes disponibles: el caso de las urbanizaciones ilegales en Andalucía

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ABSTRACT

The phenomenon of illegal urbanisations continues to be one of the great environmental and territorial challenges to be overcome in Andalusia. In spite of this, the process of fully understanding this phenomenon is significantly hindered by the scarcity of easily accessible sources that allow the scientific community to study and analyse them. This article focuses on highlighting, firstly, the scarcity of existing sources for the study of illegal urbanisations on intermediate scales; and, secondly, when they exist, their limitations to allow a diachronic analysis of the process. In addition, the possibilities offered by other cartographic sources available in the region are explored. The results point to the need for the regional administration to update the inventories in order to know the current situation of the process, as well as the limitations and potential of the Spatial Reference Data for this purpose.

RESUMEN

El fenómeno de las urbanizaciones ilegales sigue siendo uno de los grandes retos ambientales y territoriales a resolver en Andalucía. Pese a ello, su conocimiento en profundidad se enfrenta al importante hándicap de la escasez de fuentes fácilmente accesibles que permitan a la comunidad científica su estudio y análisis. El artículo se centra en poner de manifiesto, por un lado, la escasez de fuentes existentes para el estudio de las urbanizaciones ilegales a escalas intermedias. Y, en segundo término, cuando estas existen, sus limitaciones para permitir un análisis diacrónico del proceso. De manera complementaria, se exploran las posibilidades que ofrecen otras fuentes cartográficas disponibles en la región. Los resultados apuntan a la necesidad de que la administración regional actualice los inventarios para permitir conocer la situación actual del proceso así como las limitaciones y potencialidades de los Datos Espaciales de Referencia para este fin.



1. INTRODUCTION

The phenomenon of illegal urbanisations in Spain emerged towards the end of the 1970s, with its period of greatest development and extension being in the 80s and, in some cases, well into the 90s. Although there are certain discrepancies among the various works that have studied the reasons behind the beginning and extraordinary development of this process (López-Casado, 2021c), these are basically focused on two hypotheses. Firstly, there would be those who point to the phenomenon being presented as a response to the economic crisis of the 70s by large sectors of the population with fewer resources to provide themselves with a place for weekend leisure; and, additionally, as a farming area to obtain extra income, as well as a precarious secondary residence (Ezquiaga, 1983). And, secondly, other studies point to the rigidity of the new regulatory framework on urban planning after the approval of the Land Law of 1975 (Betrán & Franco, 1994), which would lead to the development of the supply of plots on rural land for urban uses outside the planning and at very competitive prices.

Beyond these issues, which are not the subject of discussion in this work, in Spain the result will be the development of a phenomenon that will have significant consequences for the municipalities involved (Burriel de Orueta, 2019; López-Casado, 2020a, 2021b, 2021a; López-Casado & Fernández, 2020; López & Mule-ro, 2022; Nel·lo i Colóm, 2011). Although with different names depending on the territorial context – pirate urbanisations, illegal plots, pirate plots or clandestine plots –, the phenomenon of illegal urbanisations – a term more commonly accepted by the works that have dealt with it – has not received much interest from the scientific field. The reasons behind this fact may be very varied but, in all likelihood, one of them is the fact that approaching the topic is a complex task due to the scarcity of sources that allow it to be studied in broad spatial and temporal contexts. In fact, most of the available works have been sponsored by public administrations; like in the case of the Community of Madrid (COPLACO, 1981), Andalusia (Dirección General de Urbanismo, 1992a; Dirección General de Ordenación del Territorio y Urbanismo, 2004), Aragón (Diputación General de Aragón, 1988), Castilla and Leon (Junta de Castilla y León, 2003) and Extremadura (Junta de Extremadura, 2004). The aforementioned limitation of sources has meant that the works that have addressed this problem from the geographic discipline in the scientific field have done so under the formula of case studies (Burriel de Orueta, 2019; López-Casado, 2021a, 2021c; García de Jalón et al., 1986) or from doctoral theses (Jiménez, 2018; López-Casado, 2019).

In this context, the objective of this article is to highlight, firstly, the scarcity of existing sources for the in-depth study of the phenomenon of illegal urbanisations on intermediate scales; and, secondly, when these sources exist, their limitations to allow a diachronic analysis of the evolution of the process from the beginning to present day. In addition, the possibilities offered by certain cartographic sources are explored to understand the territorial and spatial scope of illegal urbanisations, as well as their limitations and potential. The Autonomous Community of Andalusia was chosen for the empirical development of the research for several reasons. Firstly, because it is the only region that has drawn up two inventories of illegal urbanisations; one coinciding with the moment of greatest development (the end of the 1980s) and the second in 2004, when the phenomenon was already under control or in the process of being controlled in other territorial contexts. Secondly, because it is one of the autonomous communities where these urban processes have reached the highest levels of development, having even been the subject of a special report by the Ombudsman's Office, which describes the consequences of an illegal urbanisation as an "ecological catastrophe" for the region (Defensor del Pueblo Andaluz, 2000, p. 8). And, finally, due to the existence of the so-called Andalusian Spatial Reference Data, a repertoire of far-reaching cartographic information in terms of the topics covered as well as in terms of updates.

2. THEORETICAL FRAMEWORK

The predominant role of the dispersed city model that has characterised the growth of most cities globally has resulted in the existence of a very abundant theoretical corpus. In this regard, there are works that have



addressed issues such as the speed of urban sprawl and the ever-increasing extension of land compromised by urbanisation (for example, Schneider & Woodcock, 2008; Shlomo et al., 2011) and in general, the accelerated change in landscapes in the surroundings of most cities (Delgado & García, 2009; Irwin & Bockstael, 2007). Others have tried to find universal theories to understand how these growths occur (Batty, 2008). In addition to the above, others emphasise the positive aspects of low-density urban sprawl (Brueckner, 2000) as opposed to those that try to measure their impact, especially from an environmental perspective (Johnson, 2001; Balta & Atik, 2022). This idea is important given the relationship between the phenomenon of illegal urbanisations and the processes of urban sprawl (López-Casado, 2021c, p. 23).

On the other hand, the European Environment Agency has highlighted the negative repercussions that abusing the dispersed urban model is having on cities (European Environment Agency, 2006). Thus, in the cited document and under the title *Urban sprawl in Europe: The ignored challenge*, the far-reaching changes that are taking place in the growth model of most European cities are focused on. In this regard, it warns of both the social and environmental risks of this growth and expansion of cities that had traditionally maintained a compact urban model until practically the 1950s (*ibidem*, p. 5). It also focuses on cities in the south of the continent where this process is developing with particular virulence and the changes in the model are more noticeable.

For Lois González, Piñeira Mantiñan and Vives Miró (2016), the data on artificialisation of land in Spain between 1987 and 2006 show not only that it was one of the European countries – together with Portugal and Ireland – where the urbanised surface area grew the most (*ibidem*, p.11), but also the uneven pace at which it did so. The way in which this expansion of urbanisation took place was through “a model that committed to diffuse urbanisation (urban sprawl), which separated and expanded different parts of the city through the territory” (*Ibidem*, p. 9). However, the work does not discriminate between planned/legal and unplanned/illegal urban growth, and it cannot do so given the nature of the source used – Corine Land Cover –, therefore, it is not possible to know the incidence of one versus the other.

Despite the difficulties in the widespread identification of urban developments arising outside of urban planning, international urban studies have also focused their interest on informal urbanisation processes (Grashoff, 2020; Chiodelli & Tzfadia, 2016; Roy & AlSayyad, 2004). Similarly, in countries of the Global South, this has been a central issue in the debate on the growth of large cities given that, as several studies have pointed out, these are the main ways for the poorest population to be provided with housing (Ortiz, 2012; Pradilla, 1995). In Spain, the study of illegal urbanisations, which had been the subject of analysis mainly from the end of the 1970s to the beginning of the 1990s, (Betrán & Franco, 1994; Ezquiaga, 1983; García de Jalón et al., 1986; García-Bellido, 1983, 1986; Herce, 1975; Herce et al., 1979), has regained some relevance (Burriel de Orueta, 2018, 2019; Górgolas, 2016, 2018; Jiménez, 2018; Jiménez et al., 2017; López-Casado, 2020, 2020a, 2021; Nel-lo i Colóm, 2011).

Andalusia, like the other autonomous communities, although not with the same level of intensity (Burriel de Orueta, 2008), has also been affected by the urban sprawl processes mentioned above. In fact, several studies indicate that it has been one of the most affected by this type of phenomena (Delgado, 2007; Fernández & Cruz, 2013), highlighting, with particular intensity, coastal areas (Carvajal, 2011; Burriel de Orueta, 2008; Fernández & Cruz, 2011) together with urban agglomerations (Fernández & Cruz, 2011). However, both the objectives of the aforementioned works and the very nature of the sources used do not allow us to distinguish and individualise the planned urban developments from those that have been developed outside of urban and territorial planning. This is despite the importance that such a distinction has, given the consequences that the latter may have for the territorial structures in which both are inserted.

3. METHODOLOGY AND SOURCES

From a methodological point of view, the research has been proposed as a systematic search of the sources available from documents prepared by official bodies or public administrations for the analysis and diagnosis of the phenomenon of illegal urbanisation in Andalusia. The condition that these sources must meet is



that they must make it possible to identify, locate and quantify the urban settlements developed as a result of parcelling and urbanisation processes that have arisen outside of the current urban and territorial planning. The aim is to establish the diachronic evolution of the phenomenon of illegal plots and urbanisations in the region between the end of the 1980s and the beginning of the 2000s, as well as their scope and territorial impact.

With these criteria, only two documents were located. The first is the *Inventario y Catálogo de parcelaciones urbanísticas* (Inventory and Catalogue of urban plots) prepared in separate supplements for each of the eight provinces by different work teams commissioned and coordinated by the General Directorate of Urban Planning between 1988 and 1989 (Dirección General de Urbanismo, 1989c, 1989a, 1989b, 1989f, 1989e, 1989g, 1989h). Of these, all have been consulted except the one for the province of Jaén, although a synthesis of the results of these documents is contained in another later work called *Parcelaciones urbanísticas en el medio rural andaluz* (Urban plots in rural Andalusia) prepared on behalf of the same organisation (Dirección General de Urbanismo, 1992b). The second of the works located is the *Inventario de parcelaciones urbanísticas en suelo no urbanizable en Andalucía* (Inventory of urban plots on non-development land in Andalusia), prepared on behalf of the General Directorate of Land Management and Urban Planning in 2004 (Dirección General de Ordenación del Territorio y Urbanismo, 2004). The initial part of the latter document contains the main results from the first of the inventories and catalogues prepared.

The lapse of almost twenty years between the preparation of the last cited document and today has become an opportunity to seek alternative sources to make up for the lack of information on the phenomenon of illegal urbanisations nowadays. This fact has led us to explore the scope and limitations of the Andalusian Spatial Reference Data (hereinafter, DERA [Datos Espaciales de Referencia de Andalucía]), the most comprehensive and up to date cartographic source available for the entire region. For this reason, its potential as a source for the characterisation of the phenomenon of illegal urbanisation is analysed. Its continuous updating means that the layers of information that are likely to be used for this purpose have been changing, as well as the attributes contained therein. The continuous updating of this source together with the change in the information layers that are being offered for the different topics, as well as the attributes from which to characterise them, has resulted in choosing the update carried out in March 2017 for the thematic block entitled 07 Urban System; this contains, among others, the layers to identify and locate settlements, population centres and the population, which are entitled *su01_asentamiento*, *su02_nucleo_pol* and *su03_poblamiento-to_nucleo_diseminado* respectively.

The *polygonal-centres* layer, which includes only the population centres catalogued and coded as such by the Nomenclature of population entities developed by the Spanish National Institute of Statistics (INE [Instituto Nacional de Estadística]) for each municipality, can only be characterised from two categories: municipal head and secondary nucleus. The first exclusively contains the area occupied by the head of each municipality, i.e., 778 records, which coincides with the number of municipalities that existed in Andalusia in 2017. For its part, the *secondary nucleus* category includes the other centres (a total of 1,959 records), without distinguishing any other type of characteristic (infrastructure, industrial estate, equipment, etc.), which is why it is not useful for the objectives indicated above. With regard to the *population* layer, the result would be similar; and although this layer adds the scattered population to the categories established in the previous layer – municipal head and secondary nucleus – it does not allow a higher level of analysis.

On the contrary, the *settlements* layer, whose objective is the “recognition and identification of the population centres and settlements that form the urban fabric of the Andalusian Autonomous Community” (IECA, 2017), is the one that gives a better approximation to the reality of the region's population system. This offers, in addition to a division by categories (Head, Urban Sector, Settlement and Other), a classification (concentrated, urbanisation, divided, discontinuous, grouped, isolated, neighbourhood, productive activity, transport, service/equipment, cultural heritage and waterworks) of each of the aforementioned categories based on other considerations; finally, for each area, the state in which it is located (consolidated, in consolidation, in design or abandoned) is added, in addition to the number of people registered in each one according to the data of the Nomenclature of Population Units. The layer contains information on a total of 20,127 settlements of all types.



4. RESULTS AND DISCUSSION

The dimension of the phenomenon of illegal urbanisation and construction in Andalusia reaches truly important levels; at least that is what can be deduced if the figures that appear in the media are accurate. In this sense, in the region there would be between 300,000 and 350,000 illegal buildings of all kinds (Planelles, 2012). Other information, supported by consulting an official census, establishes that figure at the first amount indicated (Benot, 2016). For its part, in the preamble of Decree-Law 3/2019 on measures for the environmental and territorial adaptation of existing irregular buildings in the region, it is noted that, according to available documentation, “from a total of some 500,000 existing buildings on non-development land in Andalusia, around 300,000 buildings are irregular” (Parlamento de Andalucía, 2019, p. 3). However, the only documents that have the nature of an inventory of illegal urbanisations are those prepared by the General Directorate of Urban Planning, the first (Dirección General de Urbanismo, 1992b), and by the General Directorate of Land Management and Urban Planning, the second (Dirección General de Ordenación del Territorio y Urbanismo, 2004).

4.1. The 1988 Inventory of Plots

As indicated above, the *Inventario de Parcelaciones Urbanísticas 1986/1988 (Inventory of Urban Plots 1986/1988)*, developed by the Department of Public Works and Transport, was prepared in separate supplements for each province. However, it was coordinated and supervised by staff from the Regional Ministry, so it had the same methodology and objectives. In this sense, the works begin by defining the concept of the subject of the study, pointing out that, for the purposes thereof, urban plots should be understood as those “processes of residential settlement that respond to unitary land divisions or transformations of traditional agricultural plots into second homes” (Dirección General de Urbanismo, 1989c, p. 1).

As a consequence of the above, the document itself states that “isolated building types and sporadic and/or spontaneous construction on roadsides” were excluded, as well as buildings that were part of “the scattered rural habitat”; and, lastly, processes originating before 1960 would not be considered either (*ibidem*). However, the criterion of considering all those plots and urbanisations [sic] was also adopted, regardless of whether or not they had a relationship of contiguity with consolidated urban centres, or of the classification of the land on which they were settled. In any case, the settlements had to be intended for a predominantly residential use, regardless of whether it was for permanent or second homes; and, secondly, they had to have a surface area greater than 2 ha, there had to be more than 12 plots within them and, finally, they had to have a density greater than 1 property per hectare (*ibidem*, p. 2). Of all the above criteria, the one related to not taking into account the urban classification of the land on which the plots are located is the most controversial. This is due to the fact that it is one of the issues that most influences both the final diagnosis of the phenomenon and the effectiveness of the measures taken to contain or redirect it (López-Casado, 2021c).

Subsequently, in the next phase of the work, this methodology was nuanced in some terms, which led to the development of a second inventory; finally, based on even more restrictive criteria, precisely by taking into consideration the aspect highlighted above, the definitive *catalogue* of urban plots that were considered in the diagnosis was drawn up. In this sense, to develop the aforementioned catalogue, the decision was made to include only those plots that were located on land classified by the current planning as non-development land. This meant excluding those on urban land, “except in the most significant cases of municipal planning that would require a review of that classification” (Dirección General de Urbanismo, 1989d). Finally, also excluded were those plots that were “situated on development land that [had] a Partial Plan in force, except in those cases in which the Partial Plan [was] prior to 1/1/1984” (*ibidem*); in the latter case, the urbanisation project had not been carried out or had been developed in contravention of the indications of the partial plan. The decision would mean that a large number of illegal plots would be removed from the final diagnosis. In fact, as shown in table 1, almost 4,500 of the slightly more than 24,000 ha occupied by urban plots throughout the region were located on land classified as urban or designated for development.



Table 1. Distribution of the surface area (ha) occupied by illegal plots by province and urban land regime, according to the results of the 1988 inventory.

Province	No data		No Plan		Non-development		Urban		Development		Total	
	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%
Almería	321.50	32.09	0.00	0.00	511.80	51.09	0.00	0.00	168.50	16.82	1,001.80	4.16
Cádiz	65.10	1.15	151.00	2.68	5,422.00	96.17	0.00	0.00	0.00	0.00	5,638.10	23.44
Córdoba	75.01	1.99	320.70	8.49	3,300.00	87.40	0.00	0.00	80.00	2.12	3,775.71	15.69
Granada	67.50	4.01	65.00	3.86	1,048.50	62.28	0.00	0.00	502.50	29.85	1,683.50	7.00
Huelva	15.50	0.94	0.00	0.00	1,607.00	97.01	0.00	0.00	34.00	2.05	1,656.50	6.89
Jaén	3.00	0.27	2.00	0.18	719.10	65.44	9.80	0.89	365.00	33.22	1,098.90	4.57
Málaga	0.00	0.00	14.60	0.80	883.40	48.23	0.00	0.00	933.50	50.97	1,831.50	7.61
Sevilla	0.00	0.00	0.00	0.00	5,074.40	68.83	98.10	1.33	2,199.60	29.84	7,372.10	30.64
Total	547.61	2.28	553.30	2.30	18,566.20	77.17	107.90	0.45	4,283.10	17.80	24,058.11	100.00

Source: Dirección General de Ordenación del Territorio y Urbanismo, 2004b, p.20. Own creation.

The data confirm that, in provinces such as Málaga, slightly more than 50% of the urban plots were on development land; on the opposite side was Cádiz, with 100% of illegal plots on non-development land, and Córdoba, where barely 2% of this type of settlement were located on development land. In an intermediate situation were the provinces of Sevilla, with 29.84%, and Granada, with 29.85% of settlements on this type of land (table 1). In other words, the provinces of Cádiz, Córdoba and Huelva were characterised by the location of illegal plots on non-development land; in the rest, this situation was more nuanced, given that they had a significant percentage of surface area divided into plots on other types of land.

The inventory also provides information about the use of buildings. Table 2 shows the data related to the surface area occupied by the urban plots considered according to this indicator. In this sense, it can be seen that, at that time, in most of the Andalusian provinces, the predominant use of this type of settlement was as a second home. Indeed, although the average for the region as a whole suggests that the surface area occupied by urban plots dedicated to second homes was only 52.57%, an analysis by province would make it necessary to explain this statement. Thus, the existence of some of them where the second home is almost testimonial, as in the case of Cádiz with only 8.09% or Huelva with just over 23%, introduces a certain distortion into the regional average. A similar reading should be made in relation to the surface area of urban plots dedicated to primary residences; also in this case, the data for the province of Cádiz, with over 70% of the occupied surface area dedicated to this use, distorts the average for the whole. As can be seen, in provinces such as Jaén, Sevilla, Córdoba and Almería, the surface area allocated to primary residences did not reach 5%; the rest were closer to 15%, except for Málaga, which was close to 20%. In short, it could be stated that, except in the province of Cádiz, the characteristic use of illegal plots in this first stage of the phenomenon was that of second homes. These provincial differences are due to different geographical dynamics in each territory.

However, we cannot overlook the significant percentage of land affected by plots that was destined for what the study calls mixed use (table 2). In this sense, it can be seen how there are provinces that stand out for this fact, such as Huelva, Jaén and Málaga, with over 30%, whereas the provinces of Almería, Sevilla and Cádiz are at the opposite end. This is a remarkable fact given that the general trend is for mixed use to become a permanent residence over time (López-Casado, 2021b, 2021a; Nel-lo i Colóm, 2011). From the above, it could be deduced that the weight of the primary residence would be consolidated in provinces such as Cádiz, Málaga and Huelva, whilst in the rest, the majority use of second homes would be maintained.



Table 2. Surface area (ha) of plots according to the use of the properties located within them; distribution by provinces according to the results of the 1988 inventory.

Province	Primary residence		Second home		Mixed		No data		Total	
	Absolute	%	Absolute	%	Absolute	%	Absolute	%	Absolute	%
Almería	44.50	4.44%	809.80	80.83%	123.50	12.33%	24.00	2.40%	1,001.80	4.16%
Cádiz	3,947.60	70.02%	456.20	8.09%	930.30	16.50%	304.00	5.39%	5,638.10	23.44%
Córdoba	126.60	3.35%	2,659.90	70.45%	989.20	26.20%	0.00	0.00%	3,775.70	15.69%
Granada	237.00	14.08%	1,057.00	62.79%	389.50	23.14%	0.00	0.00%	1,683.50	7.00%
Huelva	192.50	11.62%	384.10	23.19%	822.30	49.64%	257.60	15.55%	1,656.50	6.89%
Jaén	0.00	0.00%	709.40	64.56%	389.50	35.44%	0.00	0.00%	1,098.90	4.57%
Málaga	365.70	19.97%	833.20	45.49%	598.70	32.69%	33.90	1.85%	1,831.50	7.61%
Sevilla	28.70	0.39%	5,737.70	77.83%	1,113.80	15.11%	491.90	6.67%	7,372.10	30.64%
Total	4,942.60	20.54%	12,647.30	52.57%	5,356.80	22.27%	1,111.40	4.62%	24,058.10	100.00

Source: Dirección General de Ordenación del Territorio y Urbanismo, 2004b, p.22. Own creation.

The spatial distribution of illegal plots throughout the regional territory based on the data from this first inventory is shown in the map in figure 1. The work points to the existence of two localisation patterns. The first, of greater importance, shows the attraction factor of the provincial capitals; in this situation these are Sevilla, Córdoba, Jaén and Granada and, to a lesser extent, Cádiz. The second, on the other hand, shows the importance of the coast; here, the cases of Almería and, above all, Málaga, serve to exemplify this pattern (figure 1). In this regard, the document itself points to this trend, noting that there is “a strong concentration in the plotting process around the most important urban centres, highlighting within them the weight of Sevilla, Cádiz and, secondarily, Córdoba” (Dirección General de Ordenación del Territorio y Urbanismo, 2004b, p. 27). However, attention is also drawn to the strong dynamism that the phenomenon presents in the municipalities of Córdoba and Chiclana de la Frontera, which, on the other hand, contrasts with the general trend towards stagnation (*ibidem*). Despite this, the document points to the “[...] general trend shown by the inventoried plots [towards] stagnation, both due to the unfeasibility of some settlements and to the saturation of the possibilities of others”, which is not an obstacle for “sectors with great dynamism from being recorded, as in the case of Chiclana or the Córdoba capital” (*ibidem*).

4.2. The 2003 inventory of urban plots on non-development land

The work for the inventory of urban plots developed on non-development land was carried out between 2002 and 2004, with the fieldwork phase corresponding to 2003. From a methodological point of view, the document starts from the definition of an urban plot as those “consolidated population enclaves, with continuity in land occupation, of more than 2 ha and 5 buildings, and located on non-development land” (Dirección General de Ordenación del Territorio y Urbanismo, 2004b, p. 7). In other words, the proposed methodology opted to limit both the size of the settlement or enclave, in the terminology chosen to refer to this type of settlement, and the number of buildings; but also, the classification of the land on which they were settled. From this, it is deduced that areas of a smaller size or with building densities of less than 2.5 buildings per ha are eliminated from the analysis, to which “centres of traditional origin” were added (*ibidem*). Finally, also outside the scope of the inventory are “the phenomena of urban indiscipline associated with isolated building without territorial continuity, even when they are made up of a large number of scattered buildings” (*ibidem*). Therefore, single-family detached properties built on non-development land outside of urban planning that were not part of a settlement were not taken into account. Therefore, one of the phenomena with the greatest social and territorial scope in spatial areas such as the Axarquía region in Málaga (Yus &



Torres, 2010), and the Valle del Almanzora in Almería, were not taken into account. Based on this conceptual definition, the proposed methodology consisted of: Gathering of information, cataloguing and processing of information, field work and, finally, the creation of a Territorial Information System from the information gathered (Dirección General de Ordenación del Territorio y Urbanismo, 2004b, p. 7).

Some of the most relevant conclusions of the study reveal that the phenomenon of illegal plots, far from slowing down, had intensified in the period of time between the two inventories. In this regard, the document points out that, between both works, despite the differences in criteria regarding the methodology used – it refers to leaving the plots located on urban or designated development land out of the analysis – an increase of 714 new illegal plots has been observed (*ibidem*, p. 63). The absolute data are even more significant; in 2003, there were 1,138 illegal plots in Andalusia, occupying a total surface area of 18,216 ha and housing 38,622 illegally constructed properties (table 3). The above data lead the authors of the study to conclude that there had been “a significant increase with respect to the situation described by the Catalogue of Urban Plots made in 1988 by the Department of Public Works and Transport itself”, adding that, in that period, “a total of 668 enclaves had been identified on this same type of land—excluding the 358 located exclusively on Urban or Designated Development land”(ibidem).

Regardless of the significant increase in both the number of new settlements (over 700 new illegal plots) and the surface area occupied, it is interesting to analyse the data broken down by provinces and municipalities; this makes it possible to analyse the differential behaviour of the phenomenon at this scale. Table 3 shows the main results of the 2003 inventory with respect to the number of existing illegal plots, the total surface area affected, as well as the number of properties built within them. As a new feature in relation to the previous period, data is offered on the number of municipalities in each province that are affected by the phenomenon, which, in addition, allows us to know the total number of municipalities in the region that have an urban settlement of this type. In this sense, the results allow us to confirm that, contrary to what other works indicate (Defensor del Pueblo Andaluz, 2000, p. 8 y ss.), the phenomenon does not seem to affect the entire region in a widespread manner or, at least, not from the viewpoint of the number of municipalities affected; as can be seen, a total of 243 from the 770 municipalities in the region were affected at that time (table 3).

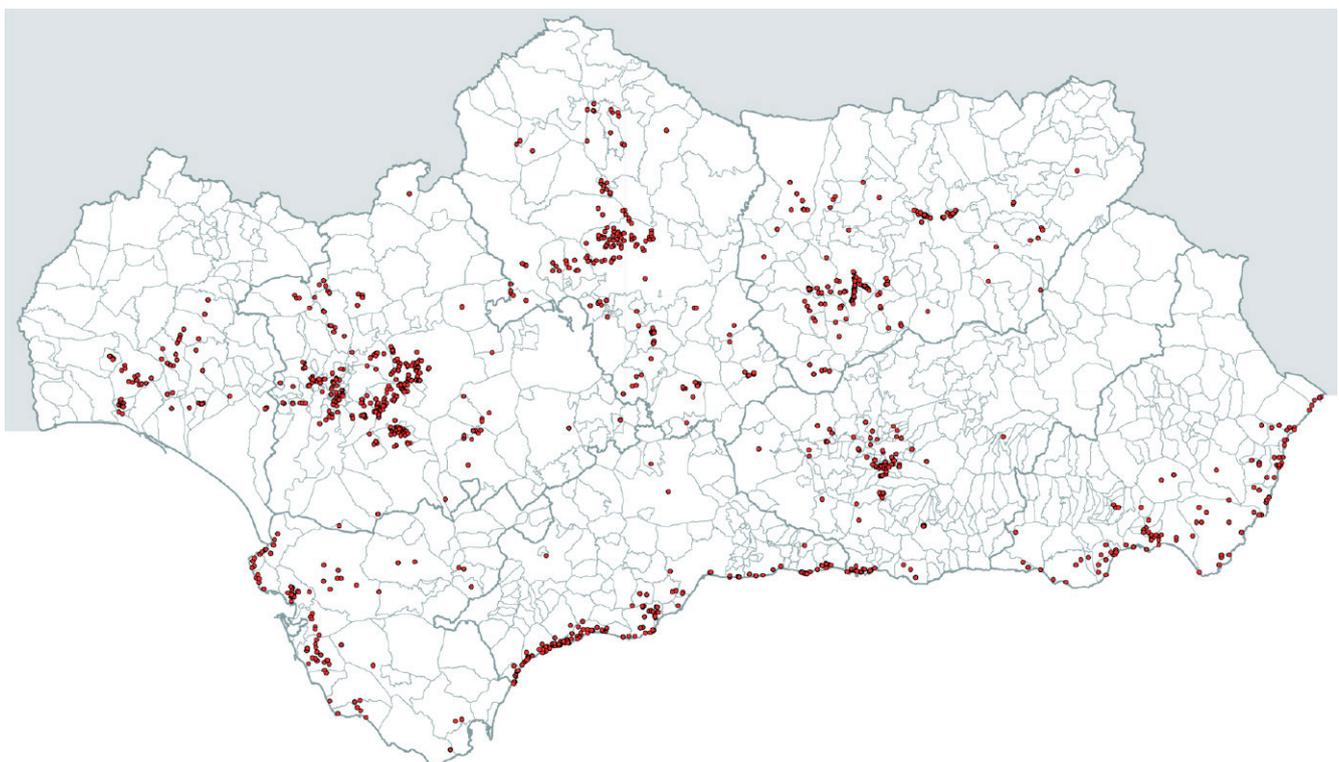


Figure 1. Distribution of urban plots identified in the inventory carried out by the General Directorate of Urban Planning in 1988. Source: Dirección General de Ordenación del Territorio y Urbanismo, 2004b, p.19.

**Table 3.** Main results of the 2003 inventory regarding the number of municipalities, illegal plots, occupied surface area and number of existing properties.

Province	Municipalities	Plots	Surface area (ha)	Properties
Almería	22	69	707.00	1,616
Cádiz	32	208	4,596.00	10,276
Córdoba	35	121	2,740.00	4,774
Granada	26	49	866.00	1,436
Huelva	17	61	1,063.00	2,214
Jaén	22	109	809.00	3,186
Málaga	44	278	3,752.00	7,020
Sevilla	45	243	3,510.00	8,100
Total	243	1,138	18,043.00	38,622

Source: Dirección General de Ordenación del Territorio y Urbanismo, 2004b, p.22. Own creation.

Compared to what occurred in the 1988 inventory, this one includes data on the number of plots, the number of municipalities affected, the total surface area of divided land and, finally, the number of properties built on these areas. This makes it possible, for example, to verify the provincial differences in terms of the scope of the phenomenon, both with respect to the number of plots and the surface area affected or the number of properties. However, the general overview of the process when some of the data are represented cartographically is not very different from that presented by this process in the first work.

The map in figure 2 highlights the aforementioned issues, showing a very similar image to that shown in the map in figure 1 above, although in absolute terms, this fact is somewhat nuanced (López-Casado & Mulero, 2021). In this sense, it can be seen that there is still a localisation pattern that links some provincial capitals to the parcelling phenomenon (Sevilla, Córdoba, Jaén and Granada). However, compared to what occurred in 1988, now the Málaga and Almería coastlines are less affected, whereas the Atlantic coast of Cádiz has expanded, as well as the mountainous area of Málaga and Valle del Guadalhorce, where the phenomenon, although with certain nuances (Yus & Torres, 2010) now presents an extraordinary importance. On the other hand, there are also large areas inland of the provinces of Almería, Granada and Málaga where the parcelling phenomenon does not occur. According to some studies, there are clear geographic reasons behind this circumstance (López-Casado & Mulero, 2021, p. 178), both from the viewpoint of the physical and environmental features of the territory, as well as the attraction factor of the Regional Centres.

Based on the inventory data, table 4 has been prepared as an extended version of the one included in the inventory (table 3); it shows both the absolute results of the different aspects counted (number of municipalities affected, number of plots, extension, etc.), as well as the relative results; for this purpose, new columns have been added containing the percentages of each item for the different spatial areas. Furthermore, a first column has been incorporated that counts the total number of municipalities in each province, which allows us to know how much each province is affected based on the percentage of municipalities that have a plot within their municipal area. This allows us to analyze the process from other perspectives, resulting in a vision more in line with the actual condition at the provincial level. Firstly, if we take the absolute number of municipalities with plots as a reference, the provinces most affected are Sevilla and Málaga, with 45 and 44 municipalities respectively. Córdoba is in third place with 35 municipalities and Cádiz follows it with 32. However, if instead of taking into consideration the absolute value, we take into account the percentage of municipalities with some plotting compared to the total number of municipalities in the province, it would now be Cádiz, with over 70% of municipalities affected, which is by far the province with the highest degree of incidence of the phenomenon. This would be followed



by Córdoba (46.67%) with practically half of the municipalities with illegal plots; next would be Málaga (44.00%) and Sevilla (42.86%). In other words, under this perspective, the province with the greatest intensity of the phenomenon would be Cádiz, and not Sevilla, which would be if only the absolute value of the municipalities with illegal plots in its municipalities is taken into account. This analysis allows us to understand the reason for the perception of some works that affirm the widespread spread of the phenomenon throughout the region (Defensor del Pueblo Andaluz, 2000).

This circumstance is reinforced if these data are analysed in combination with those related to the surface area of divided land, as well as the number of existing properties. In this sense, Cádiz, in addition to having 72.73% of municipalities affected by the plotting phenomenon, is also at the top in terms of transformed surface area (over 25% of the regional total), and with respect to the number of illegal properties (26.61% of the total existing in Andalusia); although it would occupy third place in terms of the total number of plots (18.28%), compared to 24.43% in Málaga and 21.35% in Sevilla (table 4).

The data broken down by municipality also allow us to make other considerations that serve to reinforce some of those already made, in the sense of the unequal impact of the phenomenon on the regional territory. Thus, it can be verified that there are a large number of municipalities with only one or two illegal urbanizations, and many others with up to four, where the total surface area affected is no more than 15 ha. Based on the assumption that, for a municipality, having a low number of urbanizations should not pose major management problems; even for those that have a few more, but small in size, the phenomenon can be considered as controlled, obviously with all precautions inherent to the process itself, and the most efficient way to redirect the process would be to focus efforts on the other municipalities.

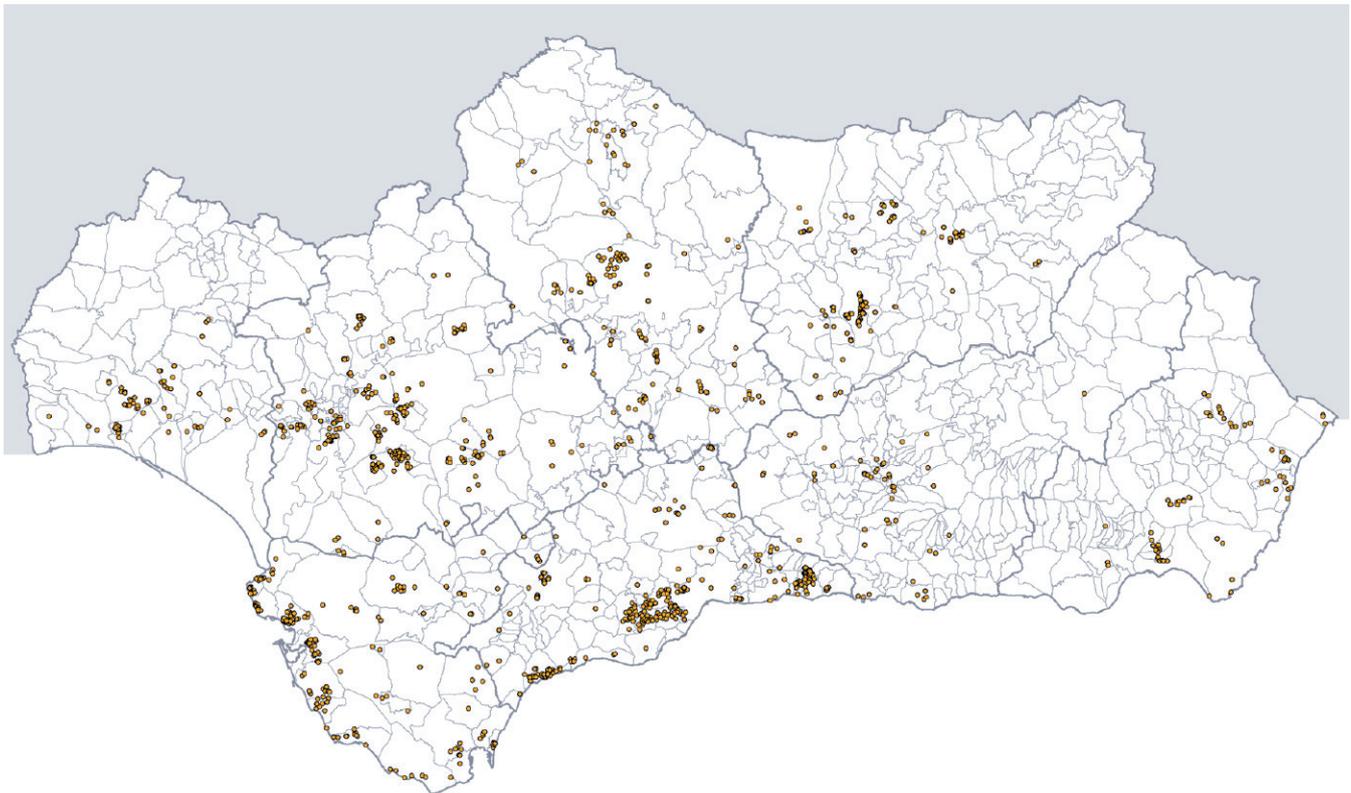


Figure 2. Distribution of urban plots identified in the inventory carried out by the General Directorate of Land Management in 2003. Source: Dirección General de Ordenación del Territorio y Urbanismo, 2004b, p. 66.



Table 4. Distribution of the number of illegal plots, occupied surface area and number of properties distributed by provinces according to the results of the 2003 inventory.

Province	Number of Municipalities			Number of Plots		Surface area (ha)		No. Properties	
	Total	With illegal plots	%	Absolute	%	Absolute	%	Absolute	%
Almería	102	22	21.57%	69.00	6.06%	707.00	3.92%	1,616	4.18%
Cádiz	44	32	72.73%	208.00	18.28%	4,596.00	25.47%	10,276	26.61%
Córdoba	75	35	46.67%	121.00	10.63%	2,740.00	15.19%	4,774	12.36%
Granada	168	26	15.48%	49.00	4.31%	866.00	4.80%	1,436	3.72%
Huelva	79	17	21.52%	61.00	5.36%	1,063.00	5.89%	2,214	5.73%
Jaén	97	22	22.68%	109.00	9.58%	809.00	4.48%	3,186	8.25%
Málaga	100	44	44.00%	278.00	24.43%	3,752.00	20.79%	7,020	18.18%
Sevilla	105	45	42.86%	243.00	21.35%	3,510.00	19.45%	8,100	20.97%
Total	770	243	31.56%	1,138.00	100.00%	18,043.00	100.00%	38,622	100.00%

Source: Dirección General de Ordenación del Territorio y Urbanismo, 2004b. Own creation.

4.3. Andalusian Spatial Reference Data: contributions and limitations

In order to assess the scope of the source, two examples have been chosen from the municipality of Jaén: an illegal urbanisation and an industrial estate (table 5). For the first case, the illegal urbanisation *Puente de la Sierra*, catalogued by the inventory carried out for the 2013 General Urban Development Plan, has been chosen. The *settlement* layer is within the *settlements* category, whose typology is that of an *urbanisation* and its state is *consolidated*. Moreover, the Los Olivares industrial estate is included under the *other* category, its typology is that of *productive activity* and, with regard to the state, it is *consolidated*. In other words, with respect to both category and typology, it would be possible to distinguish both types of settlements.

Table 5. Example of characterisation of two settlements in the municipality of Jaén according to the settlements layer contained in the DERA.

MUN_CODE	MUNICIPALITY	PROVINCE	NAME	CATEGORY	TYPOLOGY	STATE
23050	Jaén	Jaén	Los Olivares Ind. Est.	Other	Productive Act.	Consolidated
23050	Jaén	Jaén	Puente de la Sierra	Settlement	Urbanisation	Consolidated

Source: DERA. Own creation.

As has been pointed out, the layer contains four categories, of which both those entitled *head* and *other* would be discarded for the localisation of residential-type urban settlements that could have originated in a development outside the planning. The first for reasons that need no further clarification; and the second, because in all cases, they refer to those that are within the typologies of *productive activity*, *transport*, *service /equipment*, *cultural heritage* or *waterworks*. With regard to the *Urban sector* category, the issue is not so obvious, as it includes a typology that could be confused with the one we are trying to identify. This is the *urbanisation* typology, as the other, which appears in the majority of cases (neighbourhood), refers to the



neighbourhood boundaries of the municipalities. The settlements appearing under this denomination in the municipalities of Jaén, Córdoba and Sevilla have been checked and, in all cases, they refer to settlements linked to the planned city. On the other hand, it can be seen that most of these types of settlements are located in the coastal municipalities, therefore, it is easy to deduce that they are the traditional second home developments characteristic of these areas.

According to the above, only the settlements that fall into the *settlement* category and that are of the *concentrated, urbanisation, divided, discontinuous, grouped, isolated or neighbourhood* typologies would remain; with these criteria, there are 16,240 settlements in Andalusia. However, it is still possible to determine which of them would be likely to be assimilated into the phenomenon of illegal urbanisation. Thus, those presented under the *concentrated, grouped, isolated or neighbourhood* typologies also refer to developments that may be closer to those in the planned city. Therefore, only the three remaining typologies (*urbanisation, divided, discontinuous*) would remain; but, nevertheless, the settlements presented under the *urbanisation* type are also susceptible to being linked to planned developments, with a total of 483 areas of this type existing in the region. Therefore, with all the necessary caveats and precautions given the limitations of the source itself, the result could be quite close to the incidence of illegal urbanisation processes in Andalusia today. In short, and under these premises, a total of 6,820 *settlements* have been characterised under the typology of *discontinuous* or *divided* in the region, which occupy a total surface area of just over 50,000 ha, representing 5.84% of the regional surface area (table 6).

The cartographic representation of the result of the above analyses is shown in the map in figure 3. The degree of urban sprawl in some areas is particularly striking, coinciding, to a large extent, with the result pointed out by other works (Cuenca, 2016; Piñero et al., 2015). In this sense, the areas with the greatest concentration of urban sprawl are located close to the regional centres (Málaga, Jaén, Córdoba or the Bay of Cádiz); but it is also shown with special relevance in areas that until now had not appeared, such as the surroundings of the municipalities forming the urban agglomeration of the valley of Almanzora in Almería, or the area of Eastern Costa del Sol - Axarquía in Málaga.

Subsequent updates of this source have given priority to other issues and topics, so it is not possible to make progress in a better applicability of this source for the correct characterisation of the phenomenon of illegal urbanisations. The latest version (2 February 2022) of the block entitled 7. *Urban system* only collects the population centres (*07_01_NucleosUrbanos_pol, 07_01_NucleosUrbanos_pun*) and the layer entitled *07_01_Poblaciones* associated with the population settlements. In both cases, the attributes they contain do not allow the operations described in the preceding paragraphs to be performed.

Table 6. Number of settlements of the discontinuous and divided typology according to the settlements information layer of the DERA: provincial distribution and occupied surface area.

PROVINCE	No. Settlements	Total provincial surface area (ha)	Total surface area of settlement (ha)	% surface area of settlement
Almería	1,156	876,829.21	3,894.04	0.44%
Cádiz	0,575	744,535.10	10,394.19	1.19%
Córdoba	0,924	1,376,898.76	7,745.03	0.88%
Granada	0,915	1,263,798.73	3,454.44	0.39%
Huelva	0,150	1,015,074.47	1,898.30	0.22%
Jaén	0,815	1,348,629.94	3,472.38	0.40%
Málaga	1,533	730,748.86	10,714.68	1.22%
Sevilla	0,752	1,404,455.37	9,666.85	1.10%
Total	6,820	8,760,970.44	51,239.91	5.84%

Source: DERA. Own creation.

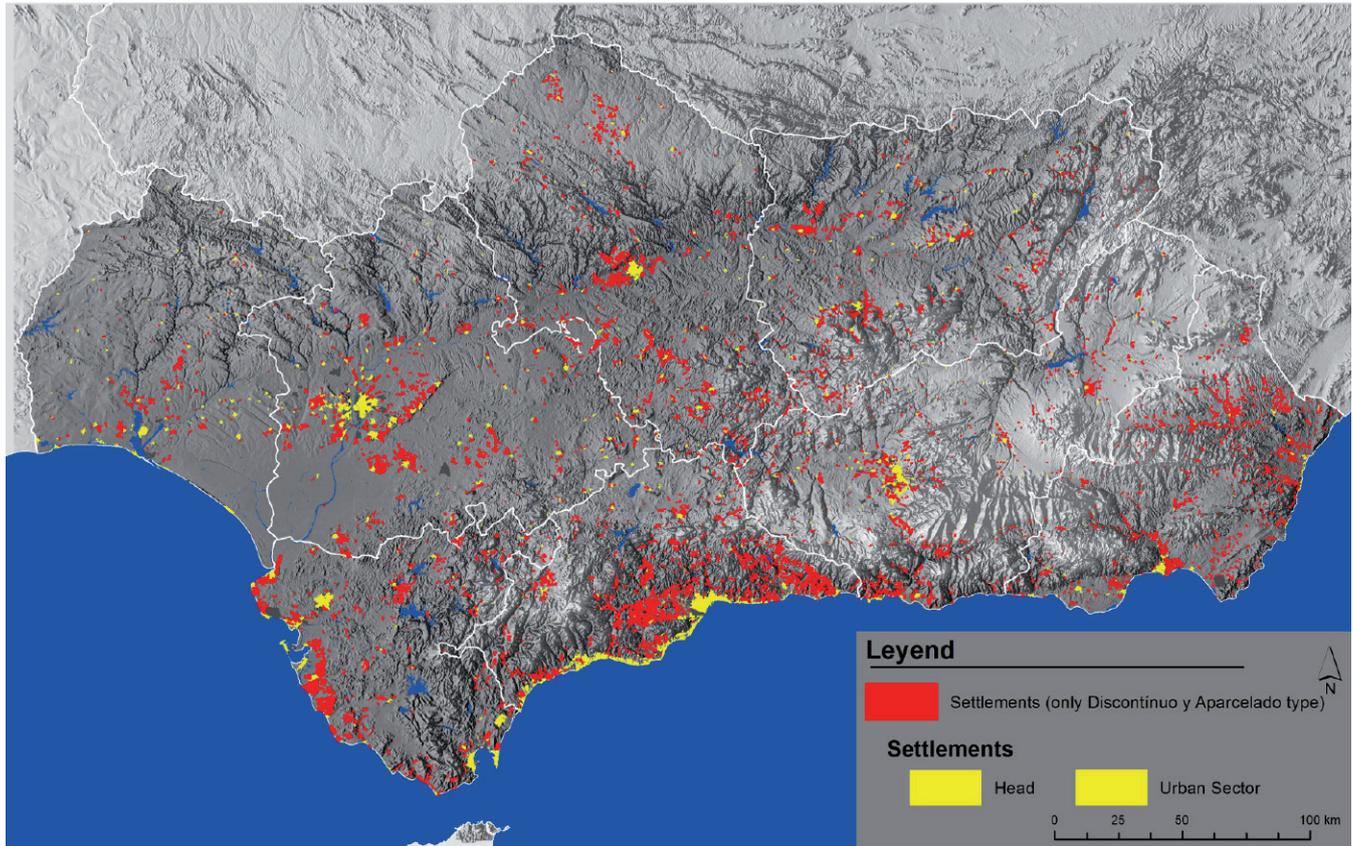


Figure 3. Settlement system in Andalusia in 2017. Source: DERA. Own creation.

5. CONCLUSIONS

The persistence of the phenomenon of illegal urbanisations in Andalusia for more than sixty years and its extension to some of the most sensitive spatial areas in the region, both from a territorial and environmental point of view, makes it advisable to perform a diachronic monitoring from its beginnings to today. The Autonomous Community belongs to the group of communities that, together with Madrid, Aragón, Castille and Leon, Canary Islands and Extremadura, has promoted the preparation of an inventory in order to determine its scope and make a diagnosis thereof; and is the only one that has developed a second work as a review or update of the one initially performed. However, despite the current dynamic of the phenomenon, since 2004, the date of this last document, no new data have been published that allow us to update the extent and degree of impact on the vast regional territory.

The results of the research have made it possible to verify that both the 1988 *Inventory of urban plots* and the 2004 *Inventory of urban plots on non-development land in Andalusia* are a very important source for an in-depth knowledge of the phenomenon of illegal urbanisations. On the one hand, they provide information on the diachronic evolution of the process on a regional scale and make it possible to measure the degree of effectiveness of the strategies implemented by the different administrations to control and redirect it. On the other hand, the existence of data on a municipal scale makes it possible to conduct analyses at these scales, as well as to understand the behaviour of the phenomenon on a provincial scale. However, it would be necessary to regularly update this type of document in order to ensure that the process has the level of monitoring it requires given the serious effects of all kinds on the territorial structures where it is present.

Despite the methodological differences between both inventories, especially with regard to whether or not those illegal urbanisations that are developed on land are classified as urban or designated for development, they have both carried out field work as an essential source of primary information for the correct characterisation of the phenomenon. The need for the methodology of this type of inventory to



include carrying out the appropriate field work in a spatial area as extensive as that of the Andalusian region, means that the cost involved could serve to explain why the data have not been updated with new inventories. On the other hand, the application of GIS methodologies and techniques could be reduce the cost of the field work.

The ongoing project in Andalusia for the compilation of thematic cartography entitled the Andalusian Spatial Reference Data (DERA in Spanish) is a good opportunity to close the gaps in the knowledge of the phenomenon of illegal urbanisations due to the lack of updating of the inventories mentioned in the preceding paragraphs. The results of this work have revealed the potential of this source for the identification and geographic localisation of urban settlements developed from illegal urbanisation processes. However, its limitations have also been verified, especially with regard to the correct and unavoidable identification of each area with a settlement of this type. However, the objectives of the organisation managing this source are not linked to the establishment of a distinction in the origin of each urban settlement based on whether or not it is suitable with municipal urban planning or territorial planning. In fact, as we have verified, in the latest updates published on the subject of the region's urban system, both information layers and the attributes within them have been removed, which in previous versions allowed a certain approach to the analysed phenomenon.

In this sense, the research has shown that the DERA are an adequate source for analysing and monitoring the illegal urbanisation processes taking place in most municipalities in the region. For this reason, it would be of interest that in future updates, the path started in the 2017 version – the subject of analysis in this paper – is resumed, in the sense of incorporating attributes to the information layers on population settlements or centres that allow them to be characterised from their genesis, especially due to whether or not they are suitable with urban planning and territorial planning.

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