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IDPlanT: the Italian database of plant translocation

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## IDPlanT: The Italian Database of Plant Translocation

Thomas Abeli, Martina D'Agostino, Simone Orsenigo, Fabrizio Bartolucci, Rita Accogli, Giulia Albani Rocchetti, Claudia Alessandrelli, Arianna Amadori, Filippo Amato, Claudia Angiolini, Silvia Assini, Gianluigi Bacchetta, Enrico Banfi, Ilaria Bonini, Andrea Bonito, Maria Luisa Borettini, Lisa Brancaleoni, Guido Brusa, Fabrizio Buldrini, Francesca Carruggio, Angelino Carta, Paolo Castagnini, Bruno Enrico Leone Cerabolini, Roberta Maria Ceriani, Giampiero Ciaschetti, Sandra Citterio, Umberto Clementi, Donatella Cogoni, Angelino Congiu, Fabio Conti, Maria Fiore Crescente, Roberto Crosti, Alba Cuenca, Marco D'Antraccoli, Daniele Dallai, Rossella De Andreis, Angela Deidda, Carlo Dessì, Marcello De Vitis, Valter Di Cecco, Mirella Di Cecco, Attilio Di Giustino, Luciano Di Martino, Giuseppe Di Noto, Gianniantonio Domina, Giuseppe Fabrini, Emmanuele Farris, Roberto Fiorentin, Bruno Foggi, Luigi Forte, Gabriele Galasso, Giuseppe Garfi, Carmelo Gentile, Rodolfo Gentili, Anna Geraci, Renato Gerdol, Gabriele Gheza, Gianpietro Giusso del Galdo, Loretta Gratani, Gaetano La Placa, Marco Landi, Tonino Loi, Alessandra Luzzaro, Alfredo Maccioni, Claudio Magnani, Sara Magrini, Francesca Mantino, Mauro G. Mariotti, Valentino Martinelli, Savino Mastrullo, Pietro Medagli, Luigi Minuto, Domitilla Nonis, Maria Elena Palumbo, Luca Paoli, Salvatore Pasta, Lorenzo Peruzzi, Simon Pierce, Maria Silvia Pinna, Franco Rainini, Sonia Ravera, Graziano Rossi, Nicola Sanna, Claudio Santini, Silvia Sau, Aldo Schettino, Rosario Schicchi, Saverio Sciandrello, Elisabetta Sgarbi, Alessandro Silvestre Gristina, Angelo Troia, Laura Varone, Mauro Villa, Elena Zappa & Giuseppe Fenu

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## RAPID REPORT

# IDPlanT: The Italian Database of Plant Translocation

Thomas Abeli<sup>1</sup>, Martina D'Agostino<sup>1</sup>, Simone Orsenigo<sup>2</sup>, Fabrizio Bartolucci<sup>3</sup>, Rita Accogli<sup>4</sup>, Giulia Albani Rocchetti<sup>1</sup>, Claudia Alessandrelli<sup>5</sup>, Arianna Amadori<sup>6</sup>, Filippo Amato<sup>7</sup>, Claudia Angiolini<sup>8</sup>, Silvia Assini<sup>9</sup>, Gianluigi Bacchetta<sup>10</sup>, Enrico Banfi<sup>11</sup>, Iaria Bonini<sup>12</sup>, Andrea Bonito<sup>13</sup>, Maria Luisa Borettini<sup>14</sup>, Lisa Brancaleoni<sup>15</sup>, Guido Brusa<sup>16</sup>, Fabrizio Buldrini<sup>17</sup>, Francesca Carruggio<sup>18</sup>, Angelino Carta<sup>19</sup>, Paolo Castagnini<sup>12</sup>, Bruno Enrico Leone Cerabolini<sup>20</sup>, Roberta Maria Ceriani<sup>21</sup>, Giampiero Ciaschetti<sup>22</sup>, Sandra Citterio<sup>23</sup>, Umberto Clementi<sup>24</sup>, Donatella Cogoni<sup>25</sup>, Angelino Congiu<sup>26</sup>, Fabio Conti<sup>27</sup>, Maria Fiore Crescente<sup>13</sup>, Roberto Crosti<sup>28</sup>, Alba Cuenca<sup>29</sup>, Marco D'Antraccoli<sup>30</sup>, Daniele Dallai<sup>31</sup>, Rossella De Andreis<sup>32</sup>, Angela Deidda<sup>33</sup>, Carlo Dessì<sup>33</sup>, Marcello De Vitis<sup>34</sup>, Valter Di Cecco<sup>35</sup>, Mirella Di Cecco<sup>36</sup>, Attilio Di Giustino<sup>37</sup>, Luciano Di Martino<sup>22</sup>, Giuseppe Di Noto<sup>38</sup>, Gianniantonio Domina<sup>39</sup>, Giuseppe Fabrini<sup>40</sup>, Emmanuele Farris<sup>41</sup>, Roberto Fiorentin<sup>42</sup>, Bruno Foggi<sup>43</sup>, Luigi Forte<sup>44,45</sup>, Gabriele Galasso<sup>46</sup>, Giuseppe Garfi<sup>47</sup>, Carmelo Gentile<sup>5</sup>, Rodolfo Gentili<sup>48</sup>, Anna Geraci<sup>49</sup>, Renato Gerdol<sup>50</sup>, Gabriele Gheza<sup>51</sup>, Gianpietro Giusso del Galdo<sup>52</sup>, Loretta Gratani<sup>13</sup>, Gaetano La Placa<sup>7</sup>, Marco Landi<sup>12</sup>, Tonino Loi<sup>33</sup>, Alessandra Luzzaro<sup>16</sup>, Alfredo Maccioni<sup>6</sup>, Claudio Magnani<sup>14</sup>, Sara Magrini<sup>53</sup>, Francesca Mantino<sup>54</sup>, Mauro G. Mariotti<sup>55</sup>, Valentino Martinelli<sup>56</sup>, Savino Mastrullo<sup>57</sup>, Pietro Medagli<sup>58</sup>, Luigi Minuto<sup>59</sup>, Domitilla Nonis<sup>60</sup>, Maria Elena Palumbo<sup>6</sup>, Luca Paoli<sup>19</sup>, Salvatore Pasta<sup>61</sup>, Lorenzo Peruzzi<sup>62</sup>, Simon Pierce<sup>63</sup>, Maria Silvia Pinna<sup>29</sup>, Franco Rainini<sup>64</sup>, Sonia Ravera<sup>7</sup>, Graziano Rossi<sup>65</sup>, Nicola Sanna<sup>66</sup>, Claudio Santini<sup>67</sup>, Silvia Sau<sup>68</sup>, Aldo Schettino<sup>69</sup>, Rosario Schicchi<sup>49</sup>, Saverio Sciandrello<sup>70</sup>, Elisabetta Sgarbi<sup>71</sup>, Alessandro Silvestre Gristina<sup>61</sup>, Angelo Troia<sup>72</sup>, Laura Varone<sup>73</sup>, Mauro Villa<sup>74</sup>, Elena Zappa<sup>75</sup>, Giuseppe Fenu<sup>29</sup>

<sup>1</sup>Università degli Studi Roma Tre Facoltà di Scienza Matematiche Fisiche e Naturali, Roma, 00154 Italy

<sup>2</sup>Università degli Studi di Pavia, Department of Earth and Environmental Sciences, Pavia, 27100 Italy

<sup>3</sup>Università di Camerino, Barisciano, Italy

<sup>4</sup>Università del Salento, Lecce, 73100 Italy

<sup>5</sup>Ente Parco Nazionale d'Abruzzo Lazio e Molise, Pescasseroli, 67032 Italy

<sup>6</sup>Università degli Studi di Sassari, Sassari, 07100 Italy

<sup>7</sup>Università degli Studi di Palermo, Palermo, 90133 Italy

<sup>8</sup>Dip. Scienze della Vita, Siena, Italy

<sup>9</sup>Pavia University, Scienze della Terra e dell'Ambiente - Sez. Ecologia del Territorio, Pavia, 27100 Italy

<sup>10</sup>University of Cagliari, Botanical Sciences, Cagliari, 09123 Italy

<sup>11</sup>Museo di Storia Naturale di Milano, Sezione di Botanica, Milano, Italy

<sup>12</sup>Università degli Studi di Siena, Siena, 53100 Italy

- <sup>13</sup>Università degli Studi di Roma La Sapienza, Roma, 00185 Italy
- <sup>14</sup>Guardie Giurate Ecologiche Volontarie, Provincia di Reggio Emilia, Reggio Emilia, Italy
- <sup>15</sup>Università degli Studi di Ferrara, Ferrara, 44121 Italy
- <sup>16</sup>Università degli Studi dell'Insubria, Varese, 21100 Italy
- <sup>17</sup>University of Bologna, Department of Biological, Geological and Environmental Sciences, Bologna, 40126 Italy
- <sup>18</sup>Università degli Studi di Bari "Aldo Moro", Museo Orto Botanico, Bari, 70125 Italy
- <sup>19</sup>Università degli Studi di Pisa, Pisa, Italy
- <sup>20</sup>Università degli Studi dell'Insubria, DBSF, Varese, 21100 Italy
- <sup>21</sup>Native Flora Centre of the Lombardy Region, Galbiate, IT 23851 Italy
- <sup>22</sup>Parco Nazionale della Majella, Sulmona, 67039 Italy
- <sup>23</sup>Università degli Studi di Milano – Bicocca, Dipartimento di Scienze dell'Ambiente e del Territorio e di Scienze della Terra, Milano, I- 20126 Italy
- <sup>24</sup>Comunità Montana Alta Valtellina, Bormio (SO), Italy
- <sup>25</sup>Università degli Studi di Cagliari, Centro Conservazione Biodiversità (CCB), Dipartimento di Scienze Botaniche, Cagliari, Italy
- <sup>26</sup>Oliena (NU), Italy
- <sup>27</sup>Centro Ricerche Floristiche dell'Appennino (Università di Camerino - Parco Nazionale del Gran Sasso e Monti della Laga), Barisciano (AQ), Italy
- <sup>28</sup>University of Rome La Sapienza, Roma, 00185 Italy
- <sup>29</sup>Università degli Studi di Cagliari, Dipartimento di Scienze Botaniche, Cagliari, 09123 Italy
- <sup>30</sup>Università di Pisa, Pisa, 56126 Italy
- <sup>31</sup>Università degli Studi di Modena e Reggio Emilia, Modena, 41121 Italy
- <sup>32</sup>Liceo Scientifico Statale "G. Ferraris", Varese, Italy
- <sup>33</sup>Agenzia Forestas, Cagliari, Italy
- <sup>34</sup>Tuscia University, Tuscia Germplasm Bank, largo dell'Università - Blocco C, Viterbo, 01100 Italy
- <sup>35</sup>Majella National Park, Sulmona, Italy
- <sup>36</sup>Ente Parco Nazionale della Majella, Sulmona (AQ), Italy

- <sup>37</sup>Giardino Botanico Gole del Sagittario, Anversa degli Abruzzi (AQ), Italy
- <sup>38</sup>Università di Palermo DIIAA, Palermo, 90128 Italy
- <sup>39</sup>University of Palermo, Agricultural, Food and Forest Sciences, Palermo, 90128 Italy
- <sup>40</sup>Sapienza Università di Roma, Dipartimento di Biologia vegetale, Rome, Italy
- <sup>41</sup>Università degli Studi di Sassari, Dipartimento di Scienze Botaniche, Ecologiche e Geologiche, Sassari, 07100 Italy
- <sup>42</sup>Veneto Agricoltura, Legnaro, 35020 Italy
- <sup>43</sup>University of Florence, Evolutionary Biology - Laboratories of Botany, Florence, Italy
- <sup>44</sup>Università degli Studi di Bari “Aldo Moro”, Museo Orto Botanico, Bari, Italy
- <sup>45</sup>Università degli Studi di Bari “Aldo Moro”, Dipartimento di Biologia, Bari, 70125 Italy
- <sup>46</sup>Museo di Storia Naturale di Milano, Sezione di Botanica, Milano, 20121 Italy
- <sup>47</sup>CNR-Istituto di Bioscienze e BioRisorse, Palermo, Italy
- <sup>48</sup>Università degli Studi di Milano-Bicocca, Dipartimento di Scienze dell'Ambiente e del Territorio, Milano, Italy
- <sup>49</sup>Università degli Studi di Palermo, Biologia ambientale e Biodiversità - Sezione di Scienze Botaniche, Palermo, 90123 Italy
- <sup>50</sup>University of Ferrara, Ferrara, Italy
- <sup>51</sup>University of Pavia, Earth and Environm Sciences, Pavia, 27100 Italy
- <sup>52</sup>University of Catania, Department of Biology, Catania, Italy
- <sup>53</sup>Università degli Studi della Tuscia, Tuscia Germplasm Bank, largo dell'Università - Blocco C, Viterbo, 01100 Italy
- <sup>54</sup>Botanical Garden Museum, University of Bari “Aldo Moro”, Bari, Italy
- <sup>55</sup>Genova University, Departmet of Earth Sciences, Environmental and Life, 16136, Italy
- <sup>56</sup>ERSAF, Bormio, Italy
- <sup>57</sup>Parco Naturale Regionale Sirente-Velino, Rocca di Mezzo (AQ), Italy
- <sup>58</sup>University of Salento, DiSTeBA, Lecce, Italy
- <sup>59</sup>Università degli Studi di Genova, Genova, 16126 Italy
- <sup>60</sup>Regione Toscana, Firenze, 50129 Italy



<sup>61</sup>IBBR CNR Palermo, Palermo, 90128 Italy

<sup>62</sup>University of Pisa, Biology, via Derna 1, Pisa, Italy

<sup>63</sup>University of Milan, Department of Agricultural and Environmental Sciences, Milan, IT-20133 Italy

<sup>64</sup>Associazione per i Vivai ProNatura, San Giuliano Milanese (MI), Italy

<sup>65</sup>Università di Pavia, Pavia, Italy

<sup>66</sup>Agenzia Forestas, Orgosolo (NU), Italy

<sup>67</sup>Gruppo Flora Modenese, Modena, Italy

<sup>68</sup>Sestu (CA), Italy

<sup>69</sup>Ente Parco Nazionale del Pollino, Potenza, 85048 Italy

<sup>70</sup>Università di Catania, Dipartimento di Scienze Biologiche, Geologiche e Ambientali, Catania, Italy

<sup>71</sup>Università degli Studi di Modena e Reggio Emilia, Life Sciences, Via Amendola, 2, Reggio Emilia, 42122 Italy

<sup>72</sup>Università degli Studi di Palermo, Dipartimento di Biologia ambientale e Biodiversità, Palermo, 90123 Italy

<sup>73</sup>Sapienza University of Rome, Department of Environmental Biology, Rome, Italy

<sup>74</sup>Centro Flora Autoctona della Lombardia - Parco Monte Barro, Galbiate (LC), Italy

<sup>75</sup>Hanbury Botanic Gardens, University of Genova, Genova, Italy

simone.orsenigo@unipv.it

## Abstract

IDPlanT is the Italian Database of Plant Translocation, an initiative of the Nature Conservation Working Group of the Italian Botanical Society. IDPlanT currently includes 185 plant translocations. The establishment of a national database on plant translocation is a key step forward in data sharing and techniques improvement in this field of plant conservation.

**Keywords:** assisted colonisation; data-sharing; plant conservation; plant reintroduction; population reinforcement; threatened plants

## Introduction

Translocation, the intentional movement of species for conservation purposes (IUCN, 2013), has sharply increased in recent decades, as demonstrated by thousands of translocation projects performed worldwide, involving animals (Brichieri-Colombi & Moehrenschrager, 2016), plants (Dalrymple et al., 2012; Fenu et al. 2019) or other organisms such as fungi and lichens (Soorae, 2018, 2021). Despite the fact that translocation techniques are now popular among conservation biologists, tracking translocation outputs and methods are challenging. The main reason for this

challenge is that most translocation cases are not published in the scientific literature, because they have been implemented in the frame of practical conservation actions and are reported in the grey literature. Other reasons for the high proportion of unpublished translocation are that in many cases they have been unsuccessful, or do not address specific research questions worthy of a scientific publication (Godefroid et al., 2011). Recent initiatives like the IUCN Global Reintroduction Perspectives (e.g.: Soorae, 2016, 2018, 2021) represent useful reports of translocations. However, in this case, data are not organised in a way that can facilitate their retrieval and analysis. In this context, databases become essential to organise and provide information on translocation techniques and improve the underlying science (Godefroid & Vanderborght, 2011). Some databases with global and regional coverage are available for various organisms (e.g. TRANSLOC for Europe <http://translocations.in2p3.fr/>) and specifically for birds (Lincoln Park Zoo, 2020). Other regional and national databases are now available for plants (Vicente et al. 2017; Silcock et al., 2019; Trans-Planta <https://www.conservacionvegetal.org/bdtcpe/>), while in other countries the establishment of translocation databases is recommended (Liu et al., 2015). National databases provide important information on the conservation strategy and policy applied at the country level. In Italy, the reinforcement of *Pinus heldreichii* subsp. *leucodermis* (Antoine) E.Murray in the Pollino National Park (Calabria) is the first documented translocation, carried out in 1958 (original datum included in IDPlanT). Recently, many more translocations have been performed (see for instance the IUCN Global Reintroduction Perspectives cited above), but a national repository for Italy is still lacking, preventing conservation biologists and practitioners from benefitting from each other's experience. The main aims of this article are: 1) to announce the creation of the Italian Database of Plant Translocation (IDPlanT), an initiative of the Nature Conservation Working Group of the Italian Botanical Society and 2) to encourage its continued implementation over time.

### **IDPlanT structure**

IDPlanT has been developed according to the most recent translocation standards (Godefroid and Vanderborght, 2011). IDPlanT will include translocation of different organisms (algae, bryophytes, lichens, fungi, and vascular plants) and all types of translocations, except for large-scale ecological restoration activities and reforestations. It contains key data for the replicability of the methods reported and for future meta-analysis (Supplementary material 1). Units (i.e., rows) represent the single translocated populations (each one referred to hereafter as a 'case'). The reason for this choice is that every translocation may differ in terms of number and type of propagules and methods of propagation, site selection procedure, release, pre- and post-release interventions, monitoring, etc. Among other information (Supplementary material 1), the database includes data on site manipulation, population aftercare and costs, which are all innovative aspects compared to other databases. Methodological variables are coupled with data concerning the percentage of plant survival, flowering, fruiting, and recruitment observed 1 year and 2 years after plant release and at the end of the monitoring period. This approach partially overcomes the limitations related to the classical declaration of success/failure provided by the authors of each case.

### **Current status of IDPlanT**

Currently (April 2021), IDPlanT contains 185 cases collected through a survey of more than 1,000 Italian botanists, conservation biologists and practitioners, most of whom are members of the Italian Botanical Society. The cases include 117 taxa (29 Italian endemics; Bartolucci et al., 2019): one lichen (*Lobaria pulmonaria* (L.) Hoffm.), one lycophyte (*Isoetes malinverniana* Ces. & De Not.), three ferns (*Asplenium trichomanes* L. subsp. *quadrivalens* D.E.Mey., *Marsilea quadrifolia* L., *Pteris cretica* L.), three gymnosperm species (*Abies nebrodensis* (Lojac.) Mattei, *Ephedra distachya* L. subsp. *distachya*, *Pinus heldreichii* Christ subsp. *leucodermis* (Antoine) E.Murray), and 109 angiosperm species.

A total of 19 taxa are listed in the annexes of the “Habitats” Directive 92/43/EEC and/or in the Bern Convention. Moreover, 30 taxa are listed as threatened with extinction (CR, EN, VU) according to the Italian Red List (Orsenigo et al., 2018, 2021). Most translocations are population reinforcements (51.4%) followed by reintroductions (36.8%), and introductions outside the species range (11.9%, including the assisted colonisation of *Acis nicaeensis* (Ardoino) Lledó, A.P. Davis & M.B. Crespo and *Zelkova sicula* Di Pasq., Garfi & Quézel).

Most translocations were carried out in the last ten years, with a sharp increase in their number in the past two decades, compared to the previous period. Currently, the database covers a period of 62 years (from 1958 to 2020; Figure 1), and translocations are well distributed across the country, with the administrative regions Lombardy, Apulia and Sicily showing the highest number of cases reported (Figure 2).

## Conclusion

The establishment of IDPlanT is expected to provide several conservation benefits. First, the database will allow conservation biologists and practitioners to share translocation techniques and outcomes, which are essential to identify best practices and avoid recurrent mistakes. Second, policy makers and other stakeholders, such as sub-national administrative jurisdictions and protected areas, will benefit from this tool for monitoring the conservation activities carried out in Italy. Third, the database will be important for the implementation of the “Habitats” Directive, as it will make conservation practices such as translocations more effective for the restoration of favourable conservation status for Italian policy species (Fenu et al., 2017), also allowing demonstration of the efforts carried out for the conservation of taxa listed in the abovementioned Directive and facilitating the periodical reporting related to the Directive. The establishment of IDPlanT plays a key role in the most recent national initiatives, such as the development of the Italian guidelines for plant translocations (Rossi et al., 2013) and the recent national law (D.M. 02-04-2020, n.98) regulating the reintroduction and reinforcement of native policy species in Italy (Gazzetta Ufficiale, 2020). This, however, does not require the establishment of a database of translocation actions.

An important aspect emerging from a preliminary analysis of the database is that only 25% of cases deal with threatened species (according to the IUCN red lists). This means that most translocations involve species that are only locally threatened or not threatened at all, at the expense of species of high conservation priority at the national or global level. On the other hand, populations of widespread taxa may be threatened or show declining trends locally. Therefore, translocation may be justified especially with taxa or populations of phytogeographic importance (e.g., marginal populations, Abeli et al. 2018). Indeed, coordination among institutions, protected area management authorities, scientists and practitioners is needed to avoid wasting resources for the translocation of species of low conservation priority. Two species (*Agrostemma githago* L. subsp. *githago* and *Piptatherum holciforme* (M.Bieb.) Roem. & Schult. subsp. *holciforme*) are considered as alien species (Galasso et al., 2018). The establishment of a national committee of experts for the evaluation of translocation project proposals before the required authorisations are released would be desirable.

Given the importance of a national data repository for plant translocation, we encourage scientists and practitioners working on plant translocation in Italy to contribute to the database. A downloadable data entry form of IDPlanT is available as Supplementary material 1. IDPlanT is managed by the Nature Conservation Working Group of the Italian Botanical Society and the University of Roma Tre, and a summarized version can be viewed at:

<https://drive.google.com/drive/folders/1ct8ZNH43Lk8KoX9wPyoO4Ad5EJm1ji9L?usp=sharing>.  
For enquiries, changes or the addition of new cases to IDPlanT, the Nature Conservation Working Group should be contacted.

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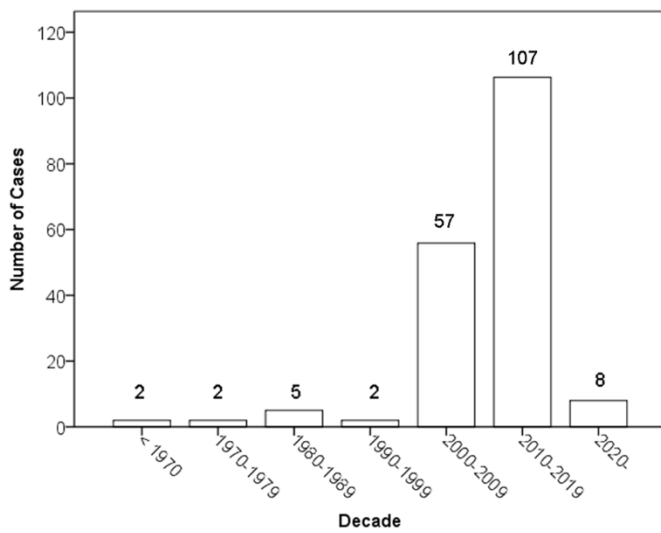
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**Figure 1.** Number of translocations carried out in Italy since the first documented case in 1958.

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**Figure 2.** Geographical distribution (at the Region level) of translocations carried out in Italy. Numbers indicate the recorded cases for each region.

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