

## PREFACE

### Locality Coordinates for Andalucía, Cádiz Province, SPAIN Collections by Stephen D. Busack, et al.

Original field notes on file at Carnegie Museum of Natural History, Pittsburgh, PA, 15213, where most of the collection was deposited; some 1969-1972 specimens (field numbers [AF series]) were also deposited at the U.S. National Museum, Washington, D.C.

Plant material was sent to Liberty Hyde Bailey Hortorium Herbarium, Cornell University, Ithaca, New York, for identification. The late Dr. William J. Dress, Professor of Botany, graciously provided identifications for this material.

“ES” (ecological specimens) materials are recorded in a separate notebook; all ES materials were sent to Carnegie Museum for identification. Identifications provided appear in **red** font on typewritten versions, along with CM Accession numbers for this material.

The map I used (included) between 1969 and 1972 (Mapas de Carreteras 9, mapas turísticos [Costa del Sol], 1:500,000”, Sección Cartográfica, Firestone Hispanía, S.A. under authorization from C.S.G.N.º1.632, 7-10-64”) was my primary “guide” to the province. For use during 1982 and 1983 Geographic Institute maps (for roadway additions, and directional or number changes) published in 1975 and 2011 are also included here in the map folder. These maps should be used together to identify secondary roadways as Cádiz has re-numbered roadways (in some cases several times), and I used the best sources available to identify today’s numbers.

Notes regarding my 1982-1983 catalogue and field notes.

*Be aware that the highway system underwent major changes between 1972 and 1982. A-381 was constructed and became operational. Several roadways were moved from original roadbeds. Route numbers were changed, and the landscape was altered in many places.*

Field Notes for *Stephen Dana Busack* between 1982 and 1983 (Spain and Morocco) are available by searching on Google for “Archive.org”, then “Search”, then “Stephen Dana Busack”. Once you have Field Notes open, pages 112 through 249 present the specimen field catalogue for the collection. Pages 250-518 contain all the field notes for the 1982-1983 Gibraltar Strait project; tissue samples field-prepared in liquid nitrogen are housed at the Museum of Vertebrate Zoology (MVZ), University of California, Berkeley. By permit agreement from ICONA, preserved corpses from all amphibians and reptiles collected in Spain were deposited at the Museo Nacional de Ciencias Naturales (Madrid). Specimens collected in Morocco are on deposit at the MVZ.

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Please be aware that there were few data (and no field guides) regarding species identification available 1969-1972. Alfredo Salvador's field guide (1974, *Guia de los anfibios y reptiles Españoles*, Instituto Nacional para la conservación de la Naturaleza, Madrid) was the first guide published. As a result there are un-corrected errors in my original field notes (e.g.: "*Lacerta schreiberi*" in my early notes actually represents *Timon lepidus*). The typewritten version of the original notes contains "corrected" nomenclature (and additional latitude and longitude information) as current (2024) taxonomic nomenclature of the herpetofauna inhabiting Spain is quite different from what it was 1969-1972. Future DNA research will likely unmask a more perfect understanding of species relationships, and more names are likely to change as our science progresses. Use caution throughout and be advised that my typewritten versions do not include everything – use original and transcribed versions in parallel to avoid omissions.

### Locality and data

Hours of observation have been standardized to a 24 hour clock. Temperatures recorded in Fahrenheit have been converted to Centigrade using the formula:  $^{\circ}\text{C} = (^{\circ}\text{F} - 32) 0.5556$  in typewritten copies. English measurements (except "road miles"), have been converted to their metric equivalents using the conversions 1 foot = 0.3048 meters and 1 mile = 1.609 kilometers where necessary.

Because my 1969-1970 (VW "beetle" sedan), and 1971 (VW "Squareback") were manufactured to U.S. standards, their odometers were calibrated for miles. The 1971 Squareback's odometer was tested (1972) along a U.S. interstate highway with mileage markers apparent at 0.5 mile intervals and found to be very accurate. On occasion I used a loaned Seat 600 with its odometer registering kilometers; all road distances recorded are reported as originally registered on the odometer.

In the notes A.O.R. and D.O.R. indicate specimens either seen "alive on the road", or "dead on the road" (an expression common in the United States).

Some locality information was verified on site between 2011 and 2013 and has been further identified by GPS coordinates measured with a Garmin e-trex device. This information, and other details not in the original field notes, appear in **red** font on typewritten pages.

As I worked through the field data included as typewritten versions I tried to present precise Latitude, Longitude, and elevation information. To do this, I used Garmin's City Navigator Europe NT 2014.4 map to locate where I collected the specimens, and later verified these localities using Google Earth. Google Earth provided elevations and, when the precise data point from Garmin's map was different from that provided by Google Earth, I adjusted GPS data to the point where Google Earth suggested it was (generally only a few meters different). GPS data for localities of donated specimens without precise data are indicated

“benchmark”; these data indicate the original founding site of the city, town, village, etc. and should not be interpreted as sites of capture.

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Included within these data is a separate EXCEL table, and a map (see map folder). This table presents starting and ending points for surveys (indicated by number) beginning from each locality. Being a creature of habit, I followed these same roadways and began at the same point each time I worked within the province; the trip odometer was set at 0 at the beginning of each survey, and when changing from one survey route to another. The routes were “run” in both directions, and if they are run in reverse require suitable adjustments.

By 1982 many of the older roadways had their km markers removed, and several markers were not replaced. Roadways were re-numbered (the dirt road from Facinas over to A-381 was never well-marked). The following map (included) will be helpful for 1982-1983 data: <https://www.cnig.es/detalleArticulo?articulo=9788441639249-C%C3%81DIZ-1:200.000>

This included map, *Mapas provinciales de España, Cádiz*” (EAN/ISBN 9788441639249, 1:200,000, 2017) is very useful.

To "upload" a map suitable for locating my earlier (1969-1972) amphibian nocturnal survey starting points (included), use the internet to go to: <https://centrodedescargas.cnig.es/CentroDescargas/buscar.do?filtro.checkCoord=N&filtro.codFamilia=02309&filtro.codCA=&filtro.codProv=11&filtro.nombreBis=&filtro.numeroHoja=> and select the 1975 map. C-440 is the GREEN colored road that runs from Jerez to Los Barrios.

To "upload" a map suitable for locating my starting points for the Gibraltar Project (1982-1983), use the internet to go to: <https://centrodedescargas.cnig.es/CentroDescargas/buscar.do?filtro.checkCoord=N&filtro.codFamilia=02309&filtro.codCA=&filtro.codProv=11&filtro.nombreBis=&filtro.numeroHoja=> and select the 2011 map (included). A-381 is the RED-boarded WHITE road that runs from Jerez to Alcalá to Los Barrios. Be aware that C-440 and A-381 do not coincide well in 1982-1983. Along its current route there are pieces of the old C-440 serving as an unmanaged service road. In 2011 a normal passenger car was able to travel *carefully* along the entire roadbed of old C-440. In 2011 C-440 was mostly in very poor repair.

Using my Amphibians road survey map (see Map file), the point between 17 and 16 is Casas del Castaño. It is 23.01 km via C-440 from the Los Barrios 1982 start point, and 22 km to Alcalá de Los Gazules from Casas del Castaño.

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### Localities frequently cited

#### **Facinas Road:**

Begin at intersection N-340 and CA-221 (N36.146455 W5.716497). Take CA-221 to intersection with roadway into town (N36.147736 W5.703245). From this point continue along CA-221 to Embalse de Almodovar (N36.159362 W5.640161), Venta de Ojén (N36.143389 W5.597771), and Puente de Hierro (N36.206581 W5.543507). Continue along CA-221 to an intersection and bridge at N36.207512 W5.541898). After 1972 this bridge became a human habitation for somebody with a large dog. It had, however, supported vehicle traffic over the Río Palmones between C-440 and Facinas from 1969 until at least 1972.

For data recorded from Facinas during 1982 and later, proceed along CA-221 to N36.209589 W5.543673 and exit at C-440a.

#### **La Algaida:**

N ~ 36.8621 W6.3027 and immediate surrounding area.

#### **La Barca de la Florida:**

"4.9 **mi** E" is incorrect, 4.9 **km** E is correct. Center of study plot: N36.6379 W5.8875. Corners: NE N36.6397 W5.8856, NW N36.6375 W5.8806, SW N36.6353 W5.8822, SE N36.6372, W5.8869.

#### **El Puerto de Santa Maria:**

Area referred to as "1.8 mi E" (from the benchmark), is located at N36.566546 W6.219228 between the Río de San Pedro and Valdelagrana Av. Del Mar. The search area extended from the Avenue to the river between the highway and (CA-32) and the Playa de Levante (it was completely flooded in 1970).

#### **NOTE:**

The • between points 17 and 16 on the survey routes map is Casas del Castaño. It is 23.0 km via C-440 from the Los Barrios 1982 start point to the •. It is 22.0 km from Casas to Álcala de Los Gazules from that same •.