

Yellowbelly Cichlid (*Trichromis salvini*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, February 2011

Revised, August 2018

Web Version, 7/1/2019



Photo: J. Bukkems. Licensed under CC BY-NC 3.0. Available: <https://www.fishbase.de/photos/ThumbnailsSummary.php?Genus=Trichromis&Species=salvini>. (August 2018).

1 Native Range and Status in the United States

Native Range

From Nico et al. (2018):

“Tropical America. Atlantic Slope drainages of Middle America from Río Papaloapan, Mexico, south to Sulphur River, Guatemala (Conkel 1993; Greenfield and Thomerson 1997).”

From Froese and Pauly (2018):

“Central America: Atlantic slope, from southern Mexico to Guatemala and Belize.”

Status in the United States

From Nico et al. (2018):

“A population was established in a rock pit or borrow pit adjacent to the abandoned tourist attraction "Pirate's World" in Dania, southern Broward County, Florida, ca. 1980; that population was eradicated by state personnel in 1981 (Courtenay et al. 1984; Courtenay and Stauffer 1990). The site later was converted into a parking lot and no longer exists. A second established population was documented in the South New River Canal (C-11 Canal), Broward County, during collecting efforts in 1990 and again in 1993 (Smith-Vaniz, personal communication). Additional specimens were collected from the same canal in 1992, 1993, and 1994 (Shafland 1996). Currently, this species occurs in canals and ditches in much of southern Broward County, and has spread westward into the Everglades system (Shafland et al. 2008; W. Loftus, pers. comm.)”

This species is in trade in the United States.

From Arizona Aquatic Gardens (2018):

“Salvini Cichlid Freshwater Aquarium Fish [...] \$9.99 – \$44.98”

Means of Introductions in the United States

From Nico et al. (2018):

“Probable aquarium release (Courtenay and Stauffer 1990). Shafland (1996) speculated the South New River Canal population could be derived from the rock pit population eliminated in 1981, or it could be the result of a recent illegal introduction.”

Remarks

Research for this report was collected by searching with both the currently accepted scientific name, *Trichromis salvini*, and the synonym, *Cichlasoma salvini*.

From Nico et al. (2018):

“Synonyms and Other Names: *Cichlasoma tenue*, *Herichthys salvini*, *Heros salvini*, *Nandopsis salvini*, mustardbelly cichlid, tricolor cichlid, guapote tricolor.”

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2018):

“Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Actinopterygii
Class Teleostei
Superorder Acanthopterygii
Order Perciformes
Suborder Labroidei
Family Cichlidae
Genus *Cichlasoma*
Species *Cichlasoma salvini* (Günther, 1862)”

The higher taxonomy is the same for both genera *Trichromis* and *Cichlasoma*.

From Eschmeyer et al. (2018):

“Current status: Valid as *Trichromis salvini* (Günther 1862). Cichlidae: Cichlinae.”

Size, Weight, and Age Range

From Froese and Pauly (2018):

“Max length : 22.0 cm SL male/unsexed; [Kullander 2003]”

Environment

From Froese and Pauly (2018):

“Freshwater; benthopelagic; pH range: 7.0 - 8.0; dH range: 5 - 20. [...] 22°C - 32°C [Conkel 1993]”

Climate/Range

From Froese and Pauly (2018):

“Tropical [...]”

Distribution Outside the United States

Native

From Nico et al. (2018):

“Tropical America. Atlantic Slope drainages of Middle America from Río Papaloapan, Mexico, south to Sulphur River, Guatemala (Conkel 1993; Greenfield and Thomerson 1997).”

From Froese and Pauly (2018):

“Central America: Atlantic slope, from southern Mexico to Guatemala and Belize.”

Introduced

This species has not been reported as introduced or established outside of its native range and Florida.

Means of Introduction Outside the United States

This species has not been reported as introduced or established outside of its native range and Florida.

Short Description

From McMahan et al. (2015):

“*Trichromis* is diagnosed by the presence of two dark lines down the length of the body, one just above the distal tip of the pectoral fin, and the other right below the dorsal fin. The mouth is small and terminal and the overall body shape is oval or oblong. Dark, narrow bars or lines are present, typically three or four, from in between the eyes to the predorsal region anterior to the dorsal fin. The interorbital markings are not as broad as those in *Maskaheros*. Both sexes of species within this genus are colorful (yellow, red, blue/green), and coloration becomes more vivid during breeding.”

From Seriously Fish (2018):

“Males have more vivid colouration, and their dorsal and anal fin tips are more pointed. Also, there is a more noticeable contrast between the males’ black and white patches. Females have a patch in the centre of their dorsal fins, and a dark spot at the bottom of their gill plates.”

Biology

From Froese and Pauly (2018):

“Produces about 500-600 eggs per spawning.”

From Pease et al. (2018):

“Examination of stomach contents revealed that most species consumed benthic meiofauna, aquatic insect larvae, and detritus [...]. *Trichromis salvini* and *M. urophthalmus* had more generalist, omnivorous diets composed of shrimp and smaller invertebrates as well as detritus and plant matter.”

“Dietary niche breadths were widest for the *Thorichthys* species, *C. robertsoni*, and *T. salvini*, and these species consumed relatively even proportions of various invertebrate categories and detritus as well as small volumes of several other categories [...].”

Human Uses

From Froese and Pauly (2018):

“Fisheries: of no interest; aquarium: commercial”

This species is in trade in the United States.

From Arizona Aquatic Gardens (2018):

“Salvini Cichlid Freshwater Aquarium Fish [...] \$9.99 – \$44.98”

Diseases

From Froese and Pauly (2018):

“White spot Disease, Parasitic infestations (protozoa, worms, etc.)
Yellow Grub, Parasitic infestations (protozoa, worms, etc.)
Haplorchis Infestation 2, Parasitic infestations (protozoa, worms, etc.)
Centrocestus Disease, Parasitic infestations (protozoa, worms, etc.)
Posthodiplostomum Infestation 2, Parasitic infestations (protozoa, worms, etc.)
Procamallanus Infection 13, Parasitic infestations (protozoa, worms, etc.)
Crassicutis Infection, Parasitic infestations (protozoa, worms, etc.)
Apharyngogstrigea Disease, Parasitic infestations (protozoa, worms, etc.)
Ascocotyle Infestation 1, Parasitic infestations (protozoa, worms, etc.)
Ascocotyle Infestation 2, Parasitic infestations (protozoa, worms, etc.)
Cladocystis Infection, Parasitic infestations (protozoa, worms, etc.)
Ascocotyle Infestation 3, Parasitic infestations (protozoa, worms, etc.)
Diplostomum Infection, Parasitic infestations (protozoa, worms, etc.)
Echinochasmus Infestation 2, Parasitic infestations (protozoa, worms, etc.)
Pelaezia Infection, Parasitic infestations (protozoa, worms, etc.)
Stunkardiella Infection, Parasitic infestations (protozoa, worms, etc.)
Uvulifer Infection, Parasitic infestations (protozoa, worms, etc.)
Sciadicicleithrum Infection, Parasitic infestations (protozoa, worms, etc.)”

No OIE-reportable diseases have been documented for this species.

Threat to Humans

From Froese and Pauly (2018):

“Harmless”

3 Impacts of Introductions

From Nico et al. (2018):

“The impacts of this species are currently unknown, as no studies have been done to determine how it has affected ecosystems in the invaded range. The absence of data does not equate to lack of effects. It does, however, mean that research is required to evaluate effects before conclusions can be made.”

4 Global Distribution



Figure 1. Known global distribution of *Trichromis salvini*. Map from GBIF Secretariat (2018). Points on the Pacific Coast of Central America were excluded from climate matching because they fall outside the reported range of this species.

5 Distribution Within the United States

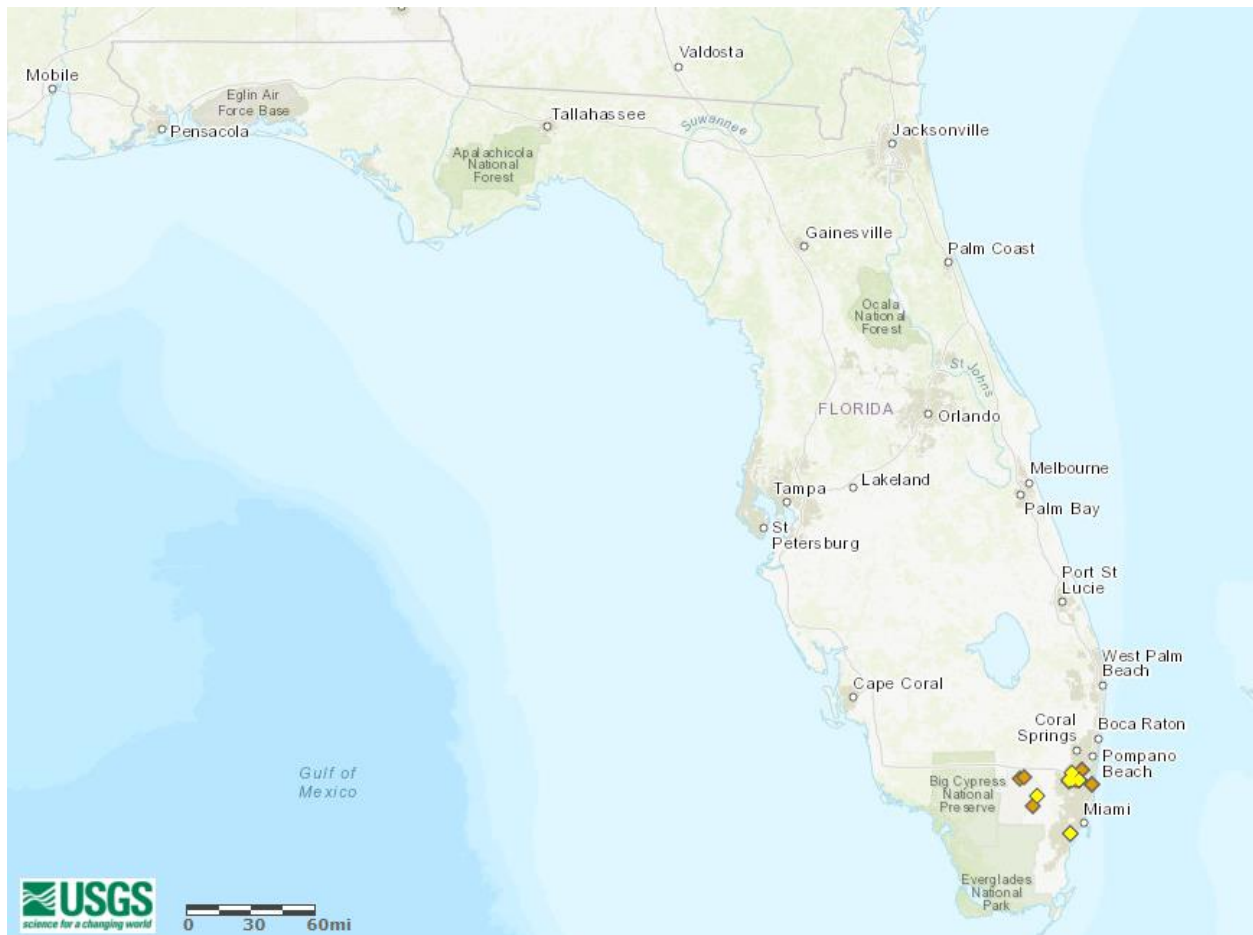


Figure 2. Known distribution of *Trichromis salvini* in the United States. Map from Nico et al. (2018). Yellow points represent established populations.

6 Climate Matching

Summary of Climate Matching Analysis

The Climate 6 score (Sanders et al. 2014; 16 climate variables; Euclidean distance) for the contiguous United States was 0.018, which is a medium climate match. Scores between 0.005 and 0.103 are classified as medium match. The climate score was high for Florida; medium for Georgia, Texas, and South Carolina; and low for all other states in the contiguous United States. Locally, climate matches were high in peninsular Florida; medium along the southern Atlantic coastline, parts of the Gulf Coast, southern U.S. border, much of coastal California, and the east coast of Puget Sound; and low elsewhere.

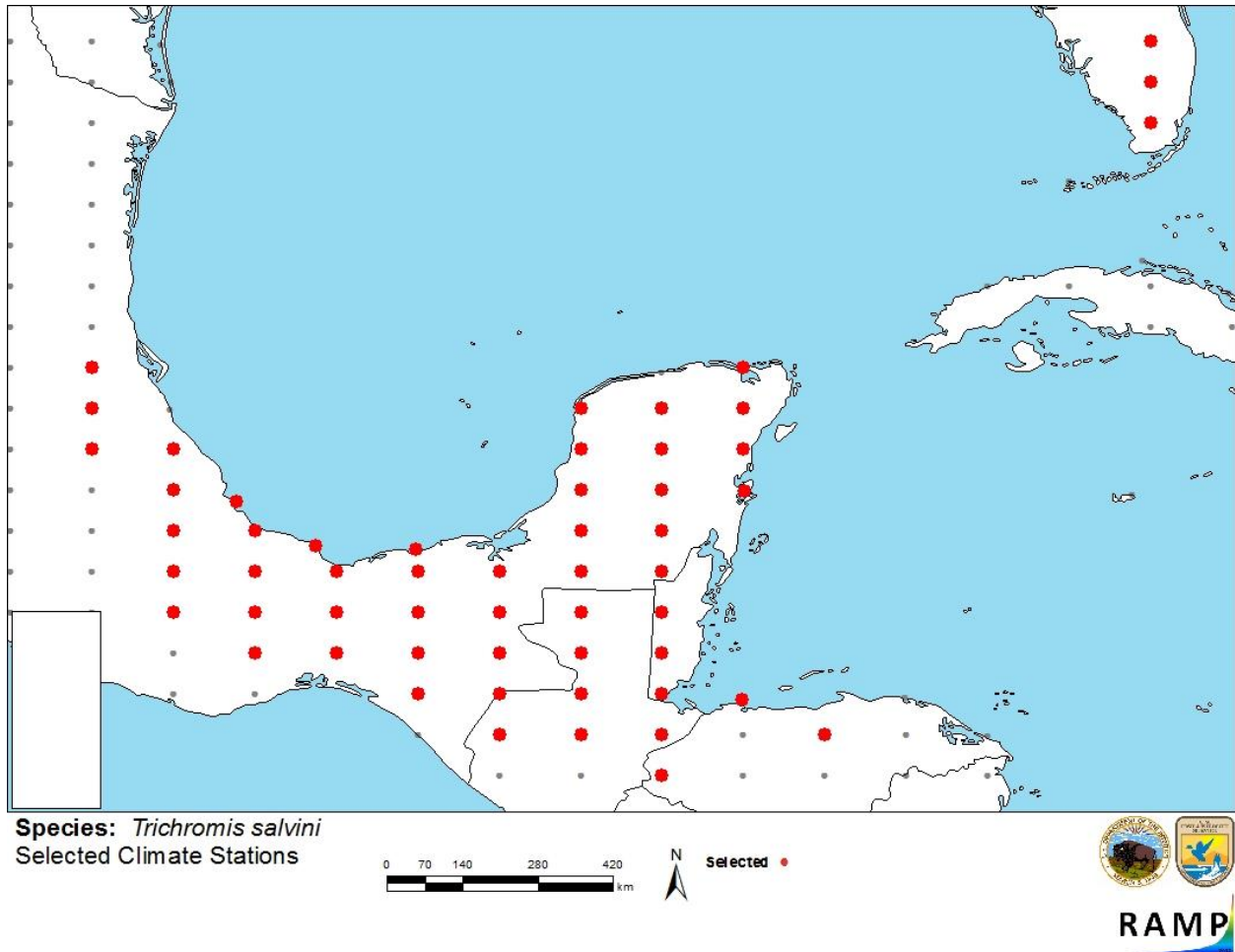


Figure 3. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red; United States (Florida), Mexico, Belize, Honduras, and Guatemala) and non-source locations (gray) for *Trichromis salvini* climate matching. Source locations from GBIF Secretariat (2018).

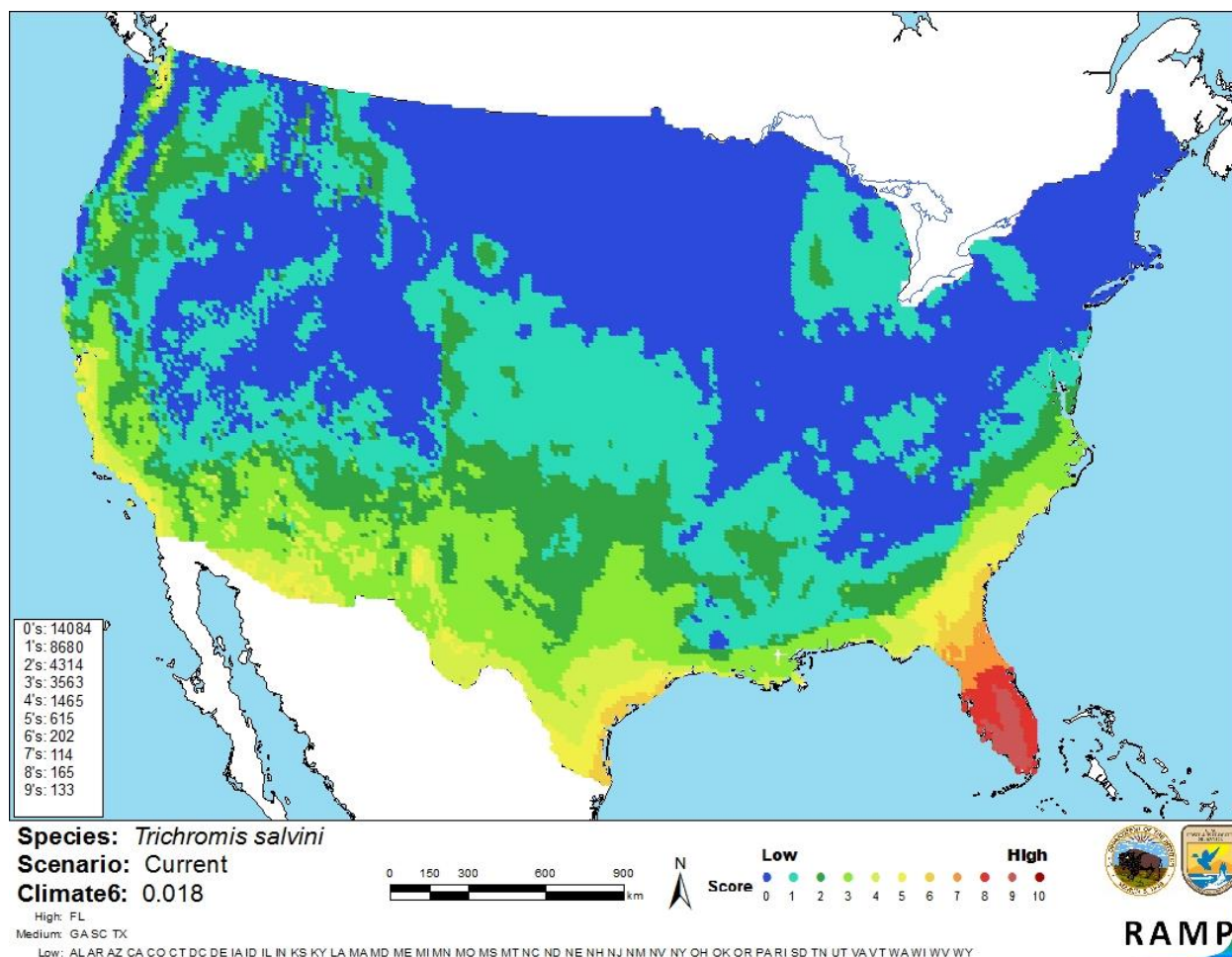


Figure 4. Map of RAMP (Sanders et al. 2014) climate matches for *Trichromis salvini* in the contiguous United States based on source locations reported by GBIF Secretariat (2018). 0=Lowest match, 10=Highest match.

The “High”, “Medium”, and “Low” climate match categories are based on the following table:

Climate 6: Proportion of (Sum of Climate Scores 6-10) / (Sum of total Climate Scores)	Climate Match Category
$0.000 \leq X \leq 0.005$	Low
$0.005 < X < 0.103$	Medium
≥ 0.103	High

7 Certainty of Assessment

There is adequate information available about the biology of *Trichromis salvini*. Its native range has been well-documented, and its introduced range is also known. This species is established outside of its native range, but no information is available about the potential negative impacts of this species. Further information is needed to adequately assess the risk this species poses to the contiguous United States. Certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Trichromis salvini, the Yellowbelly Cichlid, is native to the Atlantic slope drainages of Mexico and Central America. It is established in southern Florida, probably due to an aquarium release, but no research is available investigating impacts of introduction of this species. History of invasiveness is classified as “none documented.” This species is in the aquarium trade in the United States. *T. salvini* has a medium overall climate match with the contiguous United States. The only area of very high match occurs in peninsular Florida, where the species is currently present. Certainty of this assessment is low due to lack of information. The overall risk assessment category is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): None Documented**
- **Climate Match (Sec. 6): Medium**
- **Certainty of Assessment (Sec. 7): Low**
- **Overall Risk Assessment Category: Uncertain**

9 References

Note: The following references were accessed for this ERSS. References cited within quoted text but not accessed are included below in Section 10.

- Arizona Aquatic Gardens. 2018. Salvini Cichlid Freshwater Aquarium Fish. Available: <https://www.azgardens.com/product/salvini-cichlid-freshwater-aquarium-fish/>. (August 2018).
- Eschmeyer, W. N., R. Fricke, and R. van der Laan, editors. 2018. Catalog of fishes: genera, species, references. Available: <http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>. (August 2018).
- Froese, R., and D. Pauly, editors. 2018. *Trichromis salvini* (Günther, 1862). FishBase. Available: <https://www.fishbase.de/summary/Trichromis-salvini.html>. (August 2018).
- GBIF Secretariat. 2018. GBIF backbone taxonomy: *Trichromis salvini*, Günther, 1862. Global Biodiversity Information Facility, Copenhagen. Available: <https://www.gbif.org/species/9321404>. (August 2018).
- ITIS (Integrated Taxonomic Information System). 2018. *Cichlasoma salvini* (Günther, 1862). Integrated Taxonomic Information System, Reston, Virginia. Available: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=169788#null. (August 2018).

- McMahan, C. D., W. A. Matamoros, K. R. Piller, and P. Chakrabarty. 2015. Taxonomy and systematics of the herichthyins (Cichlidae: Tribe Heroini), with the description of eight new Middle American Genera. *Zootaxa* 3999(2):211-234.
- Nico, L., M. Neilson, and B. Loftus. 2018. *Cichlasoma salvini* (Günther, 1862). U.S. Geological Survey, Nonindigenous Aquatic Species Database, Gainesville, Florida. Available: <https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=449>. (August 2018).
- Pease, A. A., M. Mendoza-Carranza, and K. O. Winemiller. 2018. Feeding ecology and ecomorphology of cichlid assemblages in a large Mesoamerican river delta. *Environmental Biology of Fishes* 101(6):867-879.
- Sanders, S., C. Castiglione, and M. H. Hoff. 2014. Risk Assessment Mapping Program: RAMP. U.S. Fish and Wildlife Service.
- Seriously Fish. 2018. *Cichlasoma salvini* (Salvini, Salvin's Cichlid). Available: <https://www.seriouslyfish.com/species/cichlasoma-salvini/>. (August 2018).

10 References Quoted But Not Accessed

Note: The following references are cited within quoted text within this ERSS, but were not accessed for its preparation. They are included here to provide the reader with more information.

- Conkel, D. 1993. Cichlids of North and Central America. T. F. H. Publications, Inc., Neptune City, New Jersey.
- Kullander, S. O. 2003. Cichlidae (Cichlids). Pages 605-654 in R. E. Reis, S. O. Kullander, and C. J. Ferraris, Jr., editors. Checklist of the Freshwater Fishes of South and Central America. EDIPUCRS, Porto Alegre, Brazil.