Database Model for Fish Collection

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Database Model for Fish Collection

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Introduction

Biological data collection is an important activity used by the research fields of Botany, Ecology and Geographical Analysis. Biological data acquired in a field collection trip at any particular site can provide significant information for a scientific project. The data made available at the site is important to the collectors as well as to the research community. Therefore, it would be a great benefit to them if data collected is accessible through a web database that is modeled to fit the required acquisition process used by researchers. Besides the data input process it is also important to have a good query system to allow the addition of analysis plugins.

This project is a work in progress and aims to devise a complete website for the Fish Collection of UNILA, which also integrates a Botany database and a Geographic Information System.

Methods

We applied programming techniques to build the server infrastructure, the database and its web interface. We have used KORA framework as a temporary solution to the needed server infrastructure, a platform capable of modeling, storing and publishing digital objects. KORA allows the creation of different user logins, making the interface implementation easier, handling different types of data collection, resulting in a complex organization of data, which made the usage of different insert pages possible. So far we have used HTML5, CSS and JavaScript languages on the web client side of our Fish Collection.

An expert researcher from Ichthyology was interviewed and provided the required information to the database system as well as the web interface for fish batches and tissues collections (see Images 1 and 2). Besides that, some batches and tissues loan system was sketched to allow a borrowing log of biological material.

Image 1 – Record Model for Fish Collection

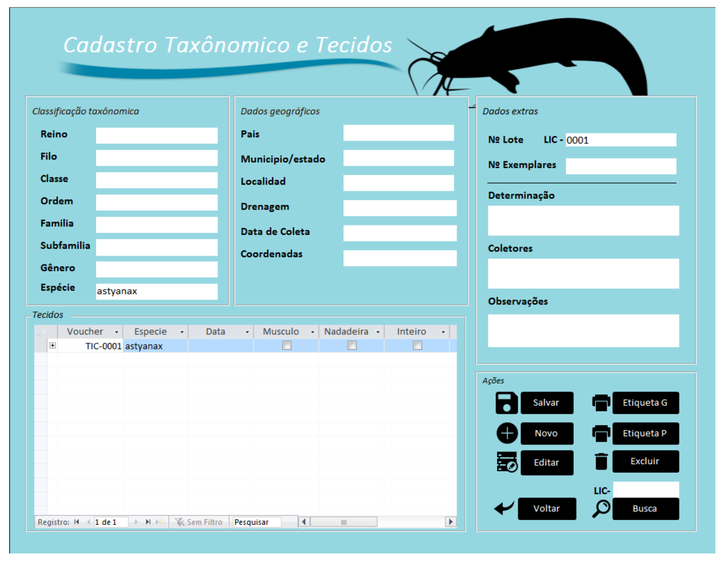


Image 2 – Collection Menu

Image 3 – Developed Model

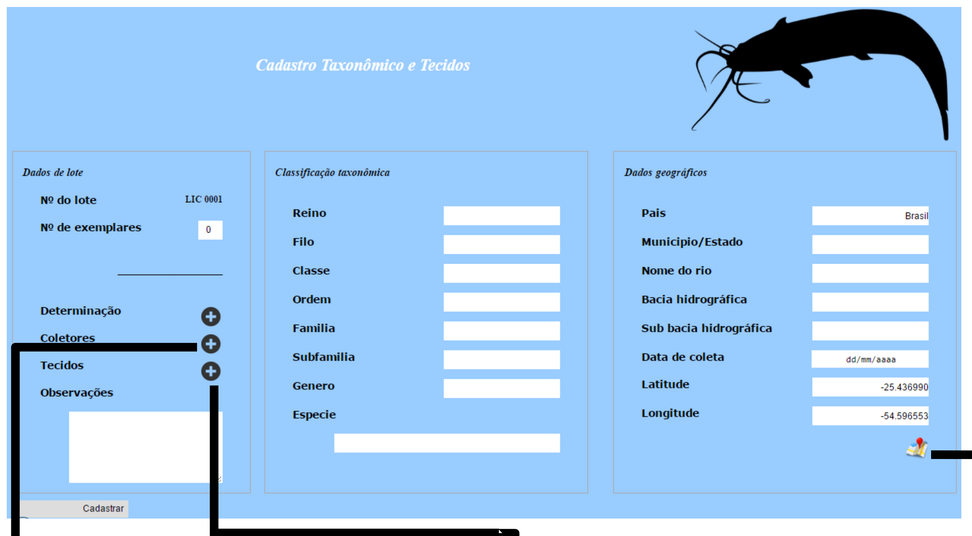


Image 4 – Collectors View

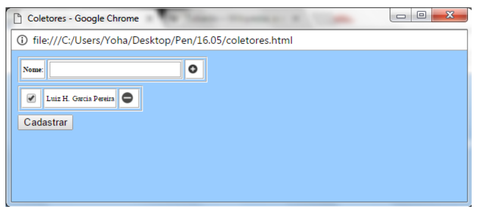


Image 5 – Tissues View

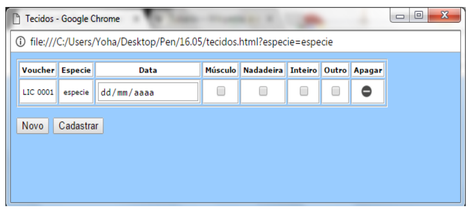


Image 6 – Map View

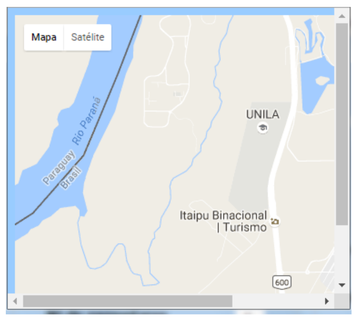
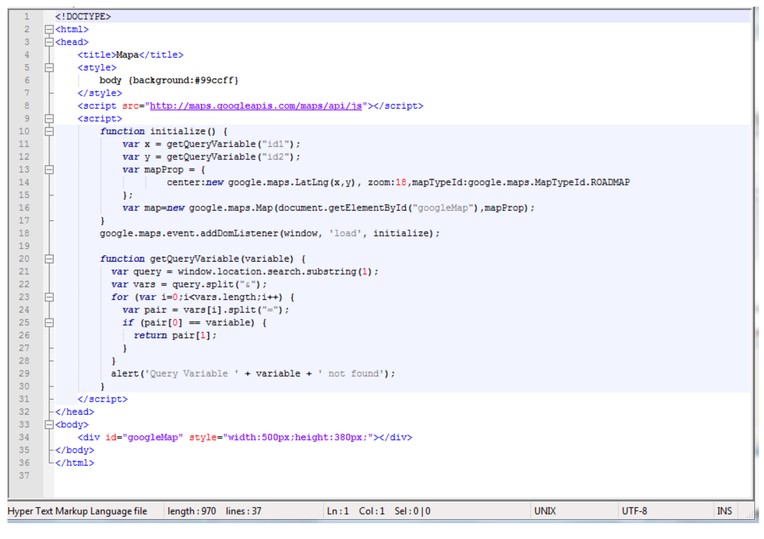


Image 7 – Map Code

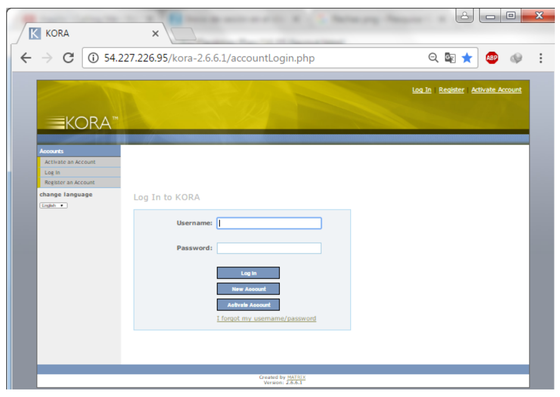


```
<!DOCTYPE>
<html>
<head>
    <title>Mapa</title>
    <style>
        body {background:#99ccff}
    </style>
    <script src="http://maps.googleapis.com/maps/api/js"></script>
    <script>
        function initialize() {
            var x = getQueryVariable("id1");
            var y = getQueryVariable("id2");
            var mapProp = {
                    center:new google.maps.LatLng(x,y), zoom:18,mapTypeId:google.maps.MapTypeId.ROADMAP
            };
            var map=new google.maps.Map(document.getElementById("googleMap"),mapProp);
        }
        google.maps.event.addDomListener(window, 'load', initialize);

        function getQueryVariable(variable) {
          var query = window.location.search.substring(1);
          var vars = query.split("&");
          for (var i=0;i<vars.length;i++) {
            var pair = vars[i].split("=");
            if (pair[0] == variable) {
              return pair[1];
            }
          }
          alert('Query Variable ' + variable + ' not found');
        }
    </script>
</head>
<body>
    <div id="googleMap" style="width:500px;height:380px;"></div>
</body>
</html>
```

Hyper Text Markup Language file | length : 970 | lines : 37 | Ln : 1 | Col : 1 | Sel : 0 | 0 | UNIX | UTF-8 | INS

Image 8 – KORA Platform



Results

At this point of the project we have completed the database modeling and a prototype of the data input web interface. The data storage model that we generated allows the management of information acquired in a field collection trip, which constitutes the basic required function to the database. With this model, the basic functions were defined, which represents a breakthrough for the data management. These structures contemplate the needs that researchers have during an investigation, and seek to provide an organized storage system (see Images 3 to 7).

The Botanical and Geographical Analysis databases will be developed as a future research project to allow its integration as web plugins. The main idea is the usage of distinct biological data to help the test of ecological hypothesis with real data collected as a future integrated service.

There is, still, the need for adjustments to the Fish Collection web interface, for its suitability for the KORA data model (see Image 8), a task that is process since August/2016.

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