

## STORY

The Monarch butterfly is an iconic species that is in severe population decline due to habitat loss. Along with funded organizations, there are a growing number of volunteer, "backyard" conservationists across the U.S. who are working to reverse this population decline by collecting the eggs and larvae (caterpillars) from the wild and raising them until they emerge as butterflies, then releasing the butterflies. An egg in the wild has about a 2% chance of survival to adulthood as a butterfly; even a novice butterfly caregiver will usually have much better results. Throughout the breeding season, one caregiver may raise anywhere from a few to hundreds of caterpillars.

Each caterpillar will pass through several stages to become a butterfly. These include the egg; five separate caterpillar stages referred to as "**instars**", between which the caterpillar sheds its skin (molts); a resting stage (at the end of the 5th instar) where it hangs in a "J" shape; and the transition from caterpillar to **chrysalis** (pupa). From the chrysalis, if healthy, will finally emerge the Monarch butterfly. After a brief rest the butterfly will then be released. (Some conservationists tag their Monarchs before release with serialized tags; if the tag is found and reported, the location and other information will be logged. This data helps scientists understand migration patterns.)

**Mary** is a backyard conservationist who has recently joined the Monarch butterfly conservation effort. Since her yard includes substantial areas with the right kinds of plants for Monarchs, she finds many eggs and caterpillars each year. She wants to note when and where each egg or caterpillar was collected, and any important observations as the specimen grows. She has been keeping notes on paper but finds this inconvenient. She also wryly observes that it's hard to tell the caterpillars of the same age apart, so when several are grouped together there is no point tracking them separately.

The goal for this application is to give Mary an easy way to track and keep notes for each specimen or group she collects, throughout its lifecycle. This app, "Monarch Diary", will help her record and find information more easily. For example if she is concerned about a specimen she will be able to easily access its history through this app. The app will also include a simple "quick reference" page with information about each lifecycle stage.

Some specific features planned for the app:

- Create and update an existing specimen
- Specimen data will include current location (i.e. which container), date collected, location collected, current stage, stage by date, observations by date, and tag number.
- A stage reference table which will allow the program to forecast the approximate range of days the butterfly will emerge.
- Links to external information sources for quick reference in case of concerns, for example a caterpillar "doesn't look right; what do I do?"

## PERSONA



Photo credit: [Simon Koopmann](#) / [CC-BY-SA-3.0](#)

# Mary

## The Nurturer

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“There is something breathtakingly beautiful about releasing a butterfly you have raised from an egg.”

### ABOUT

Employed in a “regular job” but finds time to garden, enjoy the birds and butterflies, and nurture living creatures who can use a little help. Fairly new to raising Monarch caterpillars to butterflies. Still needs to look up info on stages, care techniques, and so forth.

Why we do this: the iconic and miraculous Monarch butterfly is a species in decline, due to habitat loss and especially the loss of a key food source (milkweed). Many people have stepped up to participate in a “crowdsourcing” effort, to each make the best contribution they can to help restore the Monarch population.

### WORKS WITH

Other butterfly raisers, members of online social media groups for this hobby.

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### JOB RESPONSIBILITIES

- Collect butterfly eggs and caterpillars from milkweed plants
- Clean containers at least daily
- Supply specimens with fresh food every day
- Provide suitable containers and enclosures for each stage of the lifecycle until the butterfly is released
- Note any signs of disease and respond accordingly to protect remaining healthy specimens

### NEEDS

- I need to know when each specimen was collected so I have an idea when to expect it to transition to the next stage so I can meet its care needs.
- It would be helpful to have an easy reference for days between stages, or other info about stages and what to expect
- It would be great to have a place to note milkweed sources and whether they are chemical free (or if that’s unknown)
- A mobile app would be ideal for this as it would be best to use this app while in the “nursery” which is outside and won’t have a desktop computer handy.

### MAIN GOALS

- I want to raise as many healthy Monarch butterflies as possible to contribute to restoring the population
- I want to be able to tell a positive story to friends and family, especially children, to share the joy of raising and releasing butterflies and encourage appreciation of nature

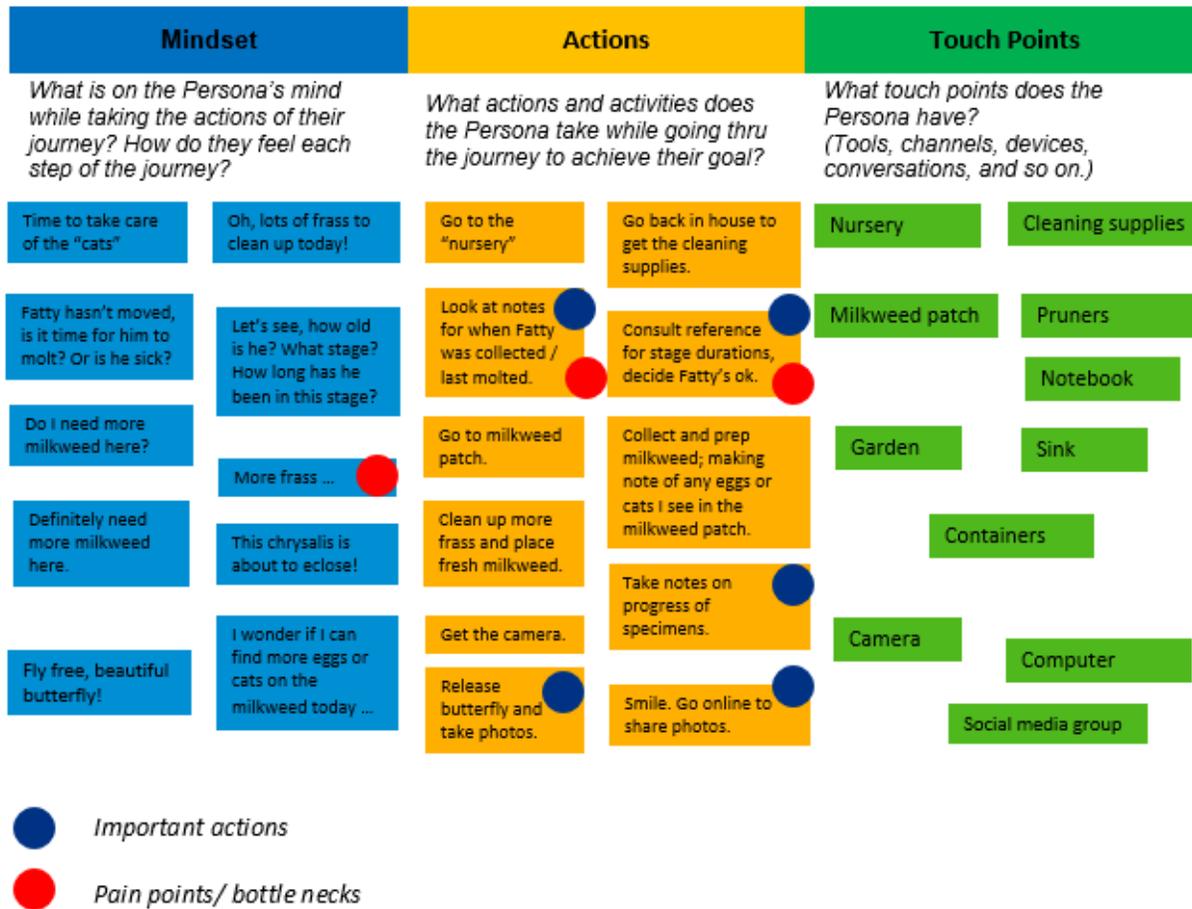
### PAIN POINTS

- Sometimes it’s hard to find all the notes on a particular specimen
- Can’t remember what day I collected that specimen, so not sure when to expect molt or pupate
- Lose track of days between stages
- Early on can’t tell the difference between cats, so can’t track separately
- Not enough milkweed!

# User Experience Journey

## Current User Experience Journey

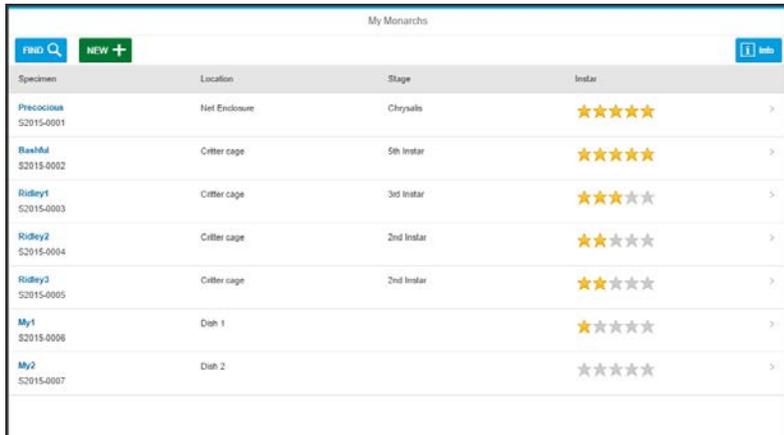
Duration of the Journey: 1 - 2 hours



## POINT OF VIEW

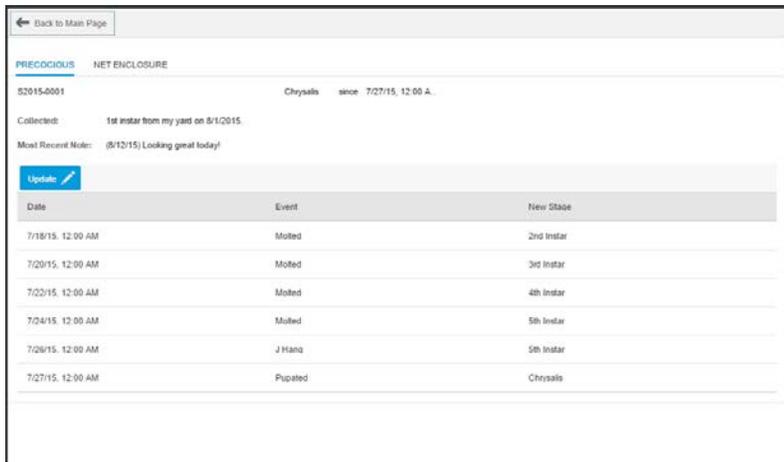
Mary needs to update records and notes on a portable device such as a tablet so that she can reference them and make sure they are accurate while she is working with the specimens.

# MOCKUPS



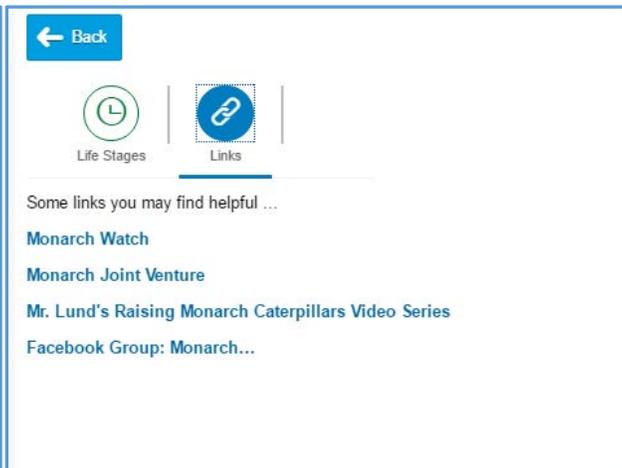
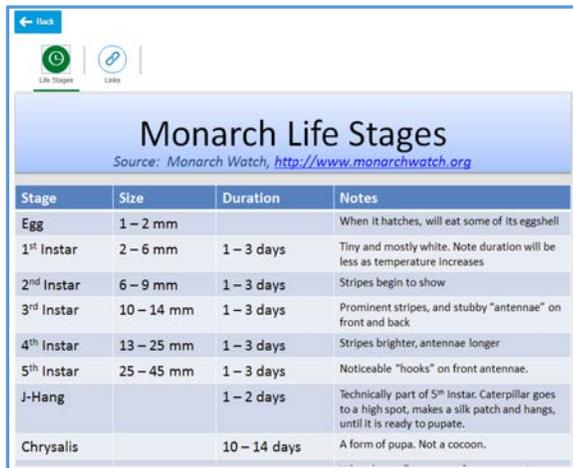
When Mary opens the app she sees her “worklist” of current specimens. She can select a specimen to look at details, or add a new specimen.

She can also access the quick reference (info) screen from the main page.



In the detail view she can update information about the specimen. She can go to the container tab to add information about that container or see the list of specimens in that container.

When she clicks the Info button she can access a quick reference of the life stages, or go to the links tab for links to external reference websites.



Link to Study in BUILD:

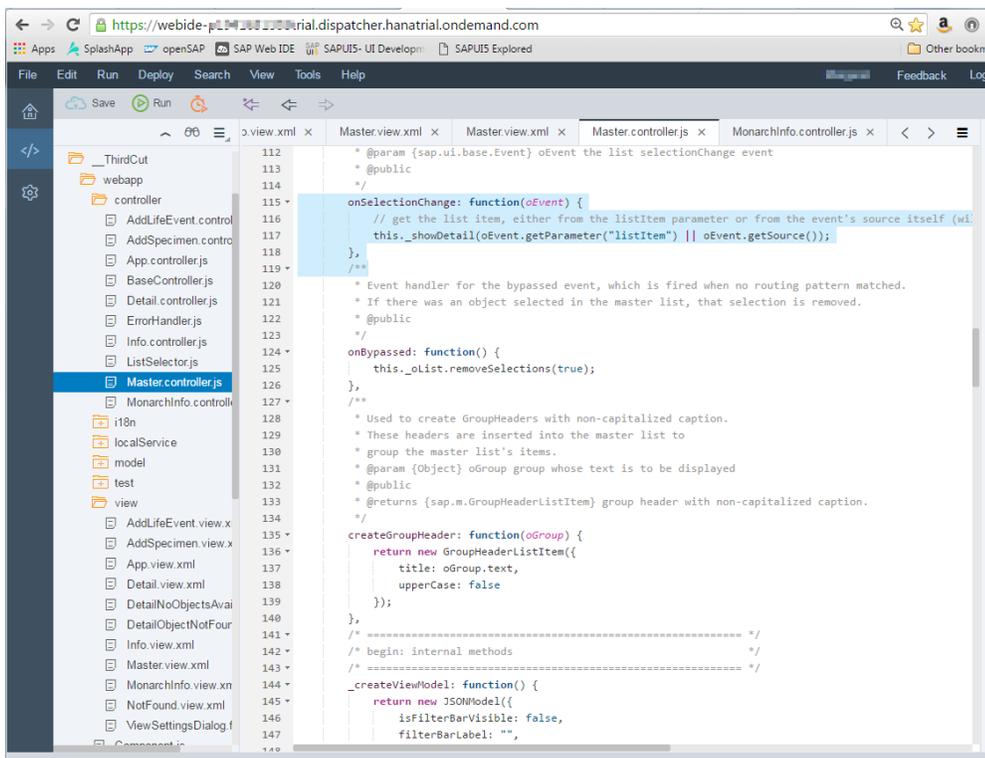
<https://standard.experiencesplash.com/home/projects/b9f3dc3193a60dde0bb1dd26/research/participant/c79df2e59b7e2bb40bb60dc3>

## DEVELOPMENT CHALLENGE

### Changes from Design to Development

- In the Design Challenge, I used the **Worklist** template. I received multiple feedback that suggested the **Master-Detail** template would be a better choice. After some reflection on how the persona will be most likely to use this app, I tried the Master Detail layout and it seems to work well. The major components are still included, just in different positions due to the template.
- Other feedback suggested to put the **function buttons** at the bottom of the screen. I realized this was correct also, as the typical usage of this app will be on a tablet.
- With the master-detail layout, the ability to navigate to **Container details** is now implemented as an active attribute in the Header section of the detail, where previously it was a tab in the second screen.

### General Implementation Notes



```
112 * @param {sap.ui.base.Event} oEvent the list selectionChange event
113 * @public
114 */
115
116 onSelectionChange: function(oEvent) {
117     // get the list item, either from the listItem parameter or from the event's source itself (wi
118     this._showDetail(oEvent.getParameter("listItem") || oEvent.getSource());
119 },
120 /**
121 * Event handler for the bypassed event, which is fired when no routing pattern matched.
122 * If there was an object selected in the master list, that selection is removed.
123 * @public
124 */
125 onBypassed: function() {
126     this._oList.removeSelections(true);
127 },
128 /**
129 * Used to create GroupHeaders with non-capitalized caption.
130 * These headers are inserted into the master list to
131 * group the master list's items.
132 * @param {Object} oGroup group whose text is to be displayed
133 * @public
134 * @returns {sap.m.GroupHeaderListItem} group header with non-capitalized caption.
135 */
136 createGroupHeader: function(oGroup) {
137     return new GroupHeaderListItem({
138         title: oGroup.text,
139         upperCase: false
140     });
141 },
142 /**
143 * =====
144 * begin: internal methods
145 * =====
146 */
147 _createViewModel: function() {
148     return new JSONModel({
149         isFilterBarVisible: false,
150         filterBarLabel: ""
151     });
152 }
```

This app prototype was implemented using an EDMX file, and beginning with the Master Detail Template.

The Specimen and Life Event entities are bound to the Master and Detail lists respectively.

The great thing about using the Master Detail template, is that the navigation from Master to Detail is inserted automatically, *once you get the binding correct*. (There is a reason the working version of my app is named "ThirdCut").

### Video

The next section provides an overview of the major components. You can watch a very brief (1:03) YouTube video of navigation in the app here:

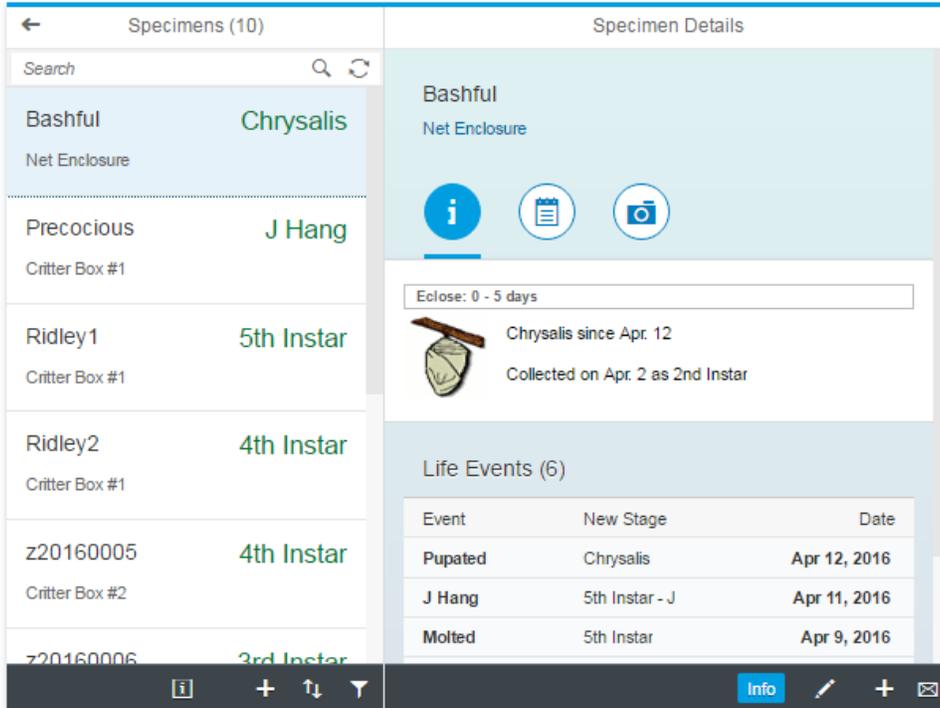
<https://youtu.be/wFusQxoHL11>

Please be sure to set quality to HD and size to full screen for best viewing. This video was recorded using Google Hangouts.

## Screen Flow / Implemented Components

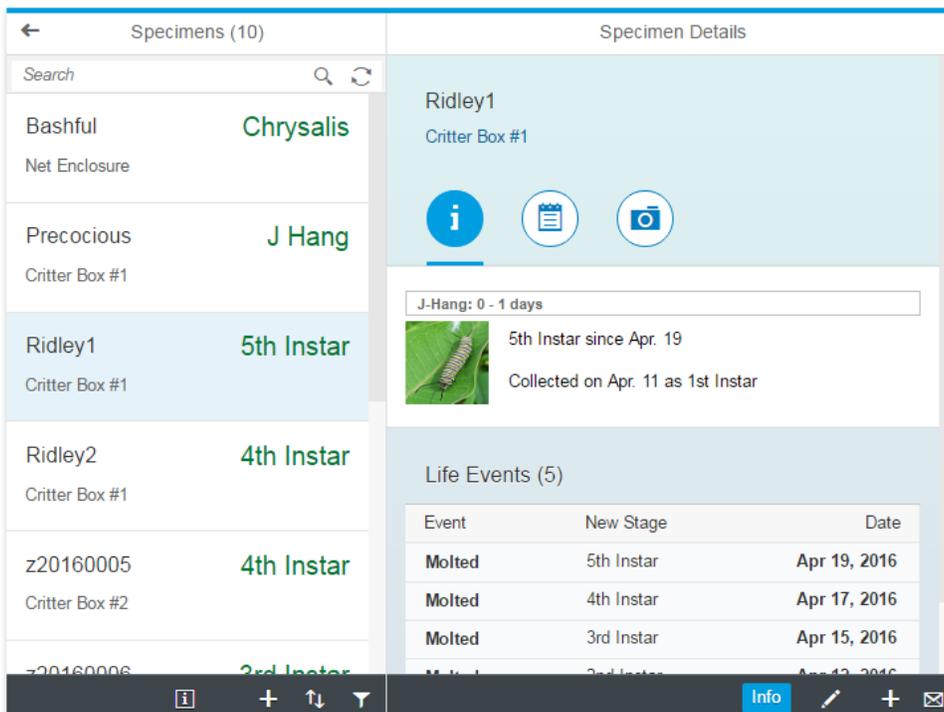
### Master-Detail

When the user opens the app, the master-detail view is displayed. The specimens will be sorted in reverse order by chronological stage, so the specimen closest to maturity will be listed first.



In the **Master View**, the user has the options to [sort](#) or [filter](#) by container or stage. This is helpful for conservationists who have a large number of containers to check. After a trip to the field to collect more eggs and caterpillars, the user can add specimens here by clicking the [add specimen](#) (plus sign) button. An "app info" button is provided in order to display credits and other key information.

Selecting a different specimen in the master list displays the details for that specimen.

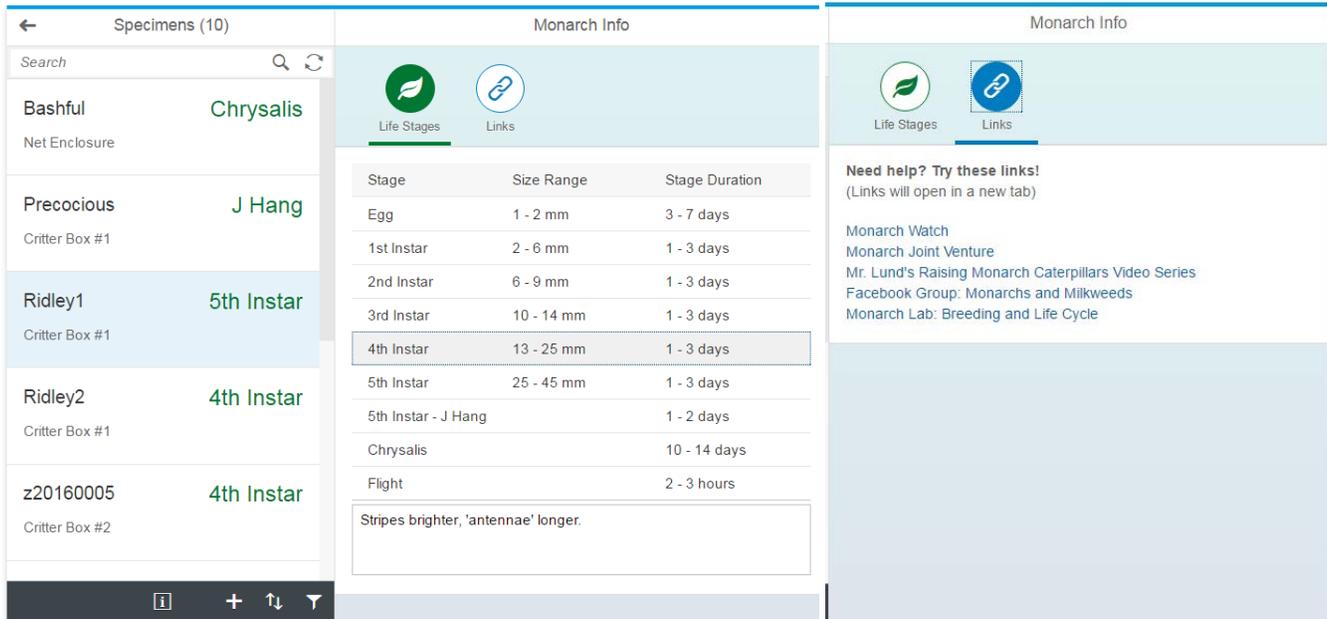


In the **Detail view**, the key information is shown for the specimen, as well as a history of "life events" – for example, when the specimen changed stage (molted, pupated, etc.). A standard [image](#) representing the stage is shown. A range of when the next transition is expected is given. ("Eclose" means that the butterfly emerges from the chrysalis.) [Function buttons](#) include: add event; edit specimen (to change name or container location); or send specimen info by email. The blue "Info" button in the footer allows the user to quickly access reference information.

### Monarch Info screen:

Users of this app like to reference information quickly if they have a question about something they observe when checking their specimens. Pressing the blue "Info" button at the bottom of the Detail screen opens a new screen that has two tabs: a) a quick reference for the life stages of the Monarch and b) a short list of web links to high-quality information sources. The links will open in a separate tab.

This view uses the Icon Tab Bar for the two features. In the Life Stages tab, there is a list with active list items, and a Text Area below. When the user selects a stage, a helpful note about that stage will be displayed in the text area.



### Add Specimen screen:

Users can add new specimens by clicking the "Add" button in the master list footer. This is implemented using the Simple Form object, as only a few fields need to be captured.

