# Observations made during field trials of NPTransect-KIMU in July 2011.

The SEAN Kittlitz’s Murrelet monitoring program employed the NPTransect application from July 3 through July 16, 2011. It recorded 46 transects covering approximately 260 kilometers of Glacier Bay, resulting in fairly heavy exercising of the software.

At the end of the survey SEAN reviewed the CSV file of observations and trackpoints, as well as the field log sheets on which exceptions and notes were recorded. The monolithic CSV is much easier to manage than the individual transect file scope we used previously. From a casual look, the values appear correct – though we will be giving it a rigorous review later this year which may possibly bring an issue or two to light. Even better, the log sheets record very few exceptions or corrections. The software well met our needs and even during heavy entry load it proved reasonably quick, very accurate, and perfectly suited to the workflow of our monitoring program. Note our prior software generally required several hours of post processing and application of corrections each evening. NPTransect, on the other hand, was synchronized, reported to CSV, and backed up within ten minutes; and the high level of automation made this post-processing simple and, again, very accurate. We consider it quite a success.

The heavy exercise did bring to light a few bugs as well as enhancements that would further improve NPTransect-KIMU’s usefulness. These items are described below, with our view of importance. Priority A was most significant and we would definitely like those issues resolved in time for our 2012 work.

### Priority A

1. Data table should reflect the name Kittlitz’s, not Kitlitz’s.
2. The application sporadically aborts, showing a message box titled “Unexpected Error.” It offers a green button to dismiss the message box, at which point the app is gone. The impact is somewhat mitigated by the speed with which the app can be manually restarted. Specific occurrences of this fault are listed at the end of this document.
3. While entering multiple groups within an observation, tabbing off the second group often does not move the focus to the third row. It goes to Angle instead. In practice this results in the Angle and Distance values being overwritten from the keyboard.
4. When a new record is opened and the focus is put on the Angle data field, it occasionally does not select the current content. This was particularly noticed when opening a second, third… record using CTRL-N. During rapid data entry, this typically results in an extra zero appearing on the value, which usually causes a choke at save time – vexing when managing multiple open observations

### Priority B

1. Usability would likely be markedly improved if the screen fonts for data entry were doubled or tripled in size. This would be particularly helpful for the red error message text fields.
2. There is about a 1 to 3 second delay after hitting CTRL-S to save an observation. It is presumed this is caused by flushing the database updates with every save. Given the occasional failure of the application, being sure the latest observation makes it to disk is extremely valuable. However, this causes observations to stack up during heavy periods, possibly to the point of impacting data quality. Is there a way to speed up the save? Would adding solid state disks to the laptops be a possible solution? Does profiling reveal anything?
3. Entries to the Angle and Distance data fields are repainted slowly on the screen. Often they are not visible during rapid data entry, but eventually appear on the screen before saving the record, when a quick glance at them may be possible. The method for selecting existing values when the fields receive the focus may be responsible for this. Is there a faster method?
4. Auto-centering the imagery around current GPS location limits flexibility in viewing other locations within the application. It can be done, but at a resolution too low to use for reviewing observations on the most recent transect while heading to a new location. It would be very useful to have a check-box to turn auto-centering on and off.
5. When editing/deleting an existing observation the “Select Action” message box would be improved by displaying the record’s timestamp in it. When multiple observations are close together, there currently may be a lot of trial and error to locate the desired record. Things would be even better if the box were capable of showing Angle/Distance/Group Size/Behavior/Species for one of the bird groups in the observation. (The typical call is to correct “that one from a minute ago with the two marbled.”) Similarly, displaying an observation’s timestamp when its screen icon is “moused over” would be helpful.
6. Being able to edit/delete outside of the “recording” mode would be useful. Right now a transect must be kept open and trackpoints generated after the end is reached in order to edit cleanups that were noted. (The editing process cannot typically be done while on transect because it is too time intensive, which results in lost observations. Delete, however, can often be slipped in quickly.) Sometimes there is not enough time between transects to edit all corrections. Sometimes the app crashes, resulting in terminating recording mode. Sometimes new information is relayed by observers considerably after the fact. Once the boat is physically away from the transect, editing is not practical because the zoom level required to distinguish separate observations is such that the icons cannot be seen: the screen scrolls away to the GPS point every 2 seconds. For these reasons, it would be most convenient to be able to edit while not actively recording. (This issue would be considerably mitigated, however, by being able to suspend auto-centering.) (*A posteriori* ArcMap editing, while possible, is not desirable because it adds complexity to both procedures and data management.)
7. Observers have been trained to the current data order, but prefer the original order of Angle, Distance, Behavior, Group Size, Species.
8. After changing any of the combo boxes for Weather, Beaufort, or Visibility, the ENTER key no longer opens a new record – the button must be clicked. ENTER is a surprisingly convenient way to open new records, particularly during a barrage of observations.

### Priority C

1. A backup laptop is configured at the start of the season for use in an emergency. It might speed recovery time to have the previous evening’s backup zipped FGDB copied from the primary to the secondary laptop and be expanded onto its Murrelets.gdb directory. Are there any pitfalls to having the backup laptop maintained in this state?
2. The initial default Weather should be “1”. That’s the case about 75% of the time.

### Fault Record

As mentioned in the Priority A section, the application sporadically aborts. Review of the CSV file generated after these occurrences suggest no observations were ever lost by this. Of course, no tracklog points are recorded during the outages, but that does not significantly affect the analysis. I saw no obvious consistent operation responsible for the aborts. For diagnostic purposes, a roster of fault events and system-identified error messages are listed below. The activity listed is at best somewhat useful, as a problem could have been generated afterwards for reasons other than the named activity. At times the activity was not recorded at all, since faults were not expected and all attention was directed to restoring the data collection function. It is noted the application always came back and, once header data were re-entered, resumed normal operation. At no time was a Windows logout or restart required or performed after an abort.

The complete set of stack trace logs will be provided separately. Aside from the events listed below, it is assumed the other logs present were the result of the evaporating startup issue. Specific notes were not made regarding the time or frequency of failed startups.

Transect: MainBay23

Time: 2011-07-05 16:30

Activity: <not recorded>

Error: Object reference not set to an instance of an object.

Transect: MainBay18

Time: 2011-07-06 9:26

Activity: <not recorded>

Error: Object reference not set to an instance of an object.

Transect: MainBay21

Time: 2011-07-06 13:01

Activity: Mouse-clicked “On-Transect” combo box to uncheck it.

Error: Object reference not set to an instance of an object.

Transect: HMiller

Time: 2011-07-08 16:02

Activity: Mouse-clicked an observation icon to open it for editing during data collection.

Error: 'DeferRefresh' is not allowed during an AddNew or EditItem transaction.

Transect: WestArm15

Time: 2011-07-09 8:33

Activity: Right-clicked an observation icon during data collection.

Error: Object reference not set to an instance of an object.

Transect: UMuirN1

Time: 2011-07-16 10:48

Activity: <not recorded>

Error: Object reference not set to an instance of an object.

Transect: WestArm13

Time: 2011-07-07 16:59

Activity: Mouse was moved, but no button was clicked.

Error: Object reference not set to an instance of an object.